DOMESTIC ENGINEERING

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Seeing Opportunities

Life is filled with opportunities. Some men engaged in business see but few of them for the reason that they are altogether too wrapped up in small affairs of labor routine, co-incident with the conducting of their business.

The plumber or heating contractor who works along day after day, his thoughts so completely occupied with the routine labor of his business that he cannot look up to see what is going on outside of it, will miss many of these opportunities.

Not that these opportunities are outside of the business, but that they are outside of its routine.

The business man who keeps his nose buried in the petty details of the day's work becomes, quite naturally, petty in thought and imagination.

He does not recognize an opportunity when he sees it.

Some particular line of work which you have been doing for years with very little success may offer an opportunity which would appear instantly upon getting a new viewpoint on the matter.

To get a new viewpoint on a matter of business requires a careful consideration of it, not with the idea of discovering how foolish it is to go along in the old way, but with the idea of seeing what new way can be devised.

If the scope of your business is so narrow that the outside developments of the industry or trade afford you no opportunities for the making of your particular business more profitable, and no reason can be seen for the condition as considered from your own point of view, get out of your establishment and look it over from the customer's side.

Some men haven't enough imagination to be able to do this, and in their case they must ask the opinion of some friendly customer, or, better, perhaps their wife.

There are no real mysteries in any business proposition.

If a certain department of your plumbing or heating business is not profitable there is a perfectly plain reason for it, if that reason can be found.

There are not only opportunities to make corrections by comparing viewpoints, but there are no end of opportunities for business extensions in the plumbing and heating trades. The developments of both industries are natural and permanent, offering opportunities for advancement to every plumbing and heating contractor who is sufficiently wide-awake to keep in touch with this progressiveness.

New requirements of plumbing and heating are created every day, and unless you know of these requirements you will not advance.

Apparatuses for the fulfilling of these new requirements are being produced by manufacturers and your business is the avenue through which these products must pass—know what the manufacturers have to offer that is new. You will see an occasional opportunity in this way.

The shrewd plumber or steamfitter is the one who is on the lookout for opportunities like these and who is not afraid to tackle them when he finds them.

It is easy to settle into a rut and take things as they come.

The worst of it is that under ordinary circumstances they will not come fast enough to keep a real "live one" busy.

The opportunities of your business life will not force themselves upon your attention. **Look for 'em!**

Heating and Ventilating of Hospital Ward Buildings

By Charles L. Hubbard

The present article applies especially to the detached ward buildings of cottage hospitals, where steam for heating is supplied from a central plant. Buildings of this type are usually provided with indirect gravity systems for the wards, supplemented by direct radiators in corridors, toilets, bath rooms, store rooms, etc., where supply ventilation is not needed. Fans are not generally required in buildings of this kind except those containing special operating and etherizing rooms, in which case vent fans of the disk type should be provided for temporary service when the rooms are in use.

Basement, first floor, and attic plans of a building of this general type are shown in Figs. 1, 2 and 3. The second floor, not shown, is similar to Fig. 2, except for a slight change in the flue arrangement made necessary by its location.

This particular building is one of a group making up a large hospital for insane patients. The general interior arrangement is practically the same as for a medical or surgical ward, except the "day rooms" in this case would be provided with beds and used as public wards. The general treatment as to heating and ventilation would be the same, with the possible exception of a slightly increased air volume in some cases.

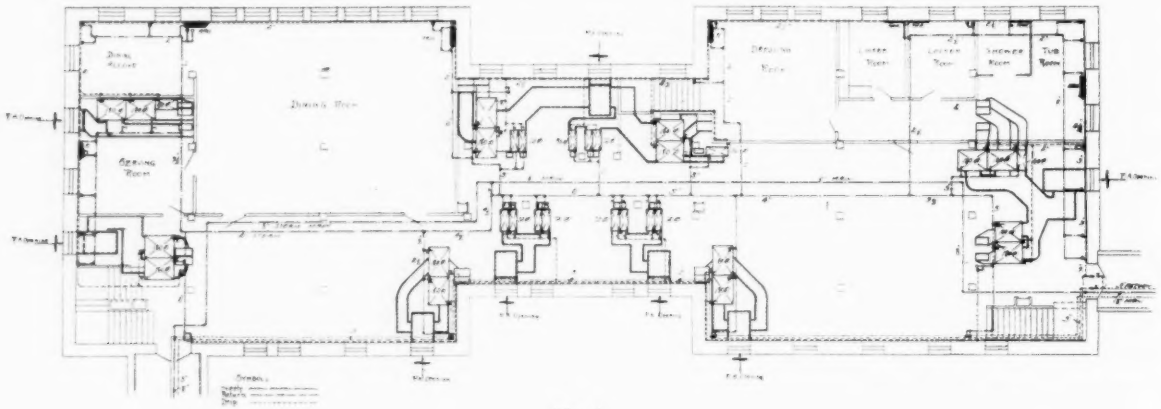


Fig. 1.

After a brief description of the building shown, methods of design and computation will be discussed, together with certain changes and modifications which might be necessary to improve the layout under certain conditions.

A general view of the indirect stacks, together with the supply and return piping, is shown in Fig. 1. The stacks are hung from the ceiling, enclosed in galvanized iron casings, and take their air supply through overhead ducts carried to the outer walls as shown. The 8-inch heating main passes the entire length of the basement on its way to other buildings further along the line, and supplies steam at low pressure to a 6-inch branch connecting with the various stacks and risers in the building. The main return for the system is carried in a trench along the outer wall, and the local return from the building connects with it through a check at the corridor entrance at the right. The condensation from the entire system returns to the boiler room by gravity, where it is trapped into a vented receiving tank and returned to the boilers. No traps or reducing valves are used in the individual buildings, an arrangement requiring especial care in the matter of grading and draining the supply and return pipes. The first floor plan, Fig. 2, requires but little explanation. The warm air is brought into the rooms through wall registers at an elevation 6 or 7 feet above the floor and the foul air removed through registers near the floor and located at the same side of the room, in order to secure the best distribution. Certain rooms like toilets, lavatories, etc., are provided with discharge ventilation only, which is in accordance with the best practice. Direct radiators are placed in the corners of the "day rooms" and also in such small rooms as are not heated from the indirect system.

The attic plan, Fig. 3, shows how the various vent flues are gathered together in the roof space by means of galvanized iron ducts which connect with two large outbound shafts provided with aspirating coils.

Design.

The points in design which will be taken up are as follows: radiating surface, systems of piping, air supply, supply and vent flues and dampers.

Radiating Surface.

This will be taken up under two headings, direct and indirect. Direct surface is based on the outside wall and window surface, and the heat losses to be offset are due to transmission and leakage.

For southerly rooms, in buildings of the best construction, the following formula may be used,

$$D = \frac{(W \times 20) + (G \times 80)}{250}, \quad (1)$$

in which

D = square feet of direct cast-iron radiation.
W = square feet of outside wall surface.
G = square feet of glass surface.

Corrections.

For the conditions noted below, make the following corrections:

For northerly rooms, multiply by 1.3; for loose construction around windows, multiply by 1.2; for a cold attic above, multiply by 1.1.

Example. A man on the northerly side of a building has 100 square feet of outside wall, 20 of glass, and a ceiling of 90 square feet against a cold attic. The construction about the windows is rather loose. How many square feet of direct radiation should be provided?

Solution:

$$R = \frac{(100 \times 20) + (20 \times 80)}{250} \times 1.3 \times 1.2 \times 1.1 = 26 \text{ sq. ft.}$$

If the window construction had been good, the multiplier 1.2 would have been omitted, and so on. One of the best forms of direct radiation for this class of work is that known as the "hospital radiator." It is of open construction, plain pattern, and is attached to the wall instead of being placed on the floor. Its advantages are freedom from crevices for the accumulation of dirt, and the accessibility of all parts for cleaning. The ordinary forms of wall radiation in plain pattern, when set out well from the wall, give very good satisfaction in this class of work when the surfaces are not too extended. The radiators being small, as a general thing, are best provided with the single-pipe connection, being simpler to install and more convenient to turn on and off. Connecting corridors, sun rooms, etc., may often employ wall coils to advantage where it is desirable to extend the surface over a considerable space. When there are occupied basement rooms to be heated, wall radiators may be used, placing them at such a height that the bottom will be at least 12 inches above the normal water level in the return mains. Radiators used in this way should have a two-pipe connection with the steam supply at the top. With this arrangement no harm will result if the water rises into the radiator temporarily through the return. The size of indirect radiator may be determined in different ways according to local conditions. Experience has shown that with low steam pressures, and 8-inch pin radiators of the usual type, about 30 square feet is sufficient for a single room having one outside wall surface and one window, with a southern exposure. The same room upon the northern side of a building should contain 40 square feet of surface. For corner rooms, with two windows, 50 and 60 square feet of surface should be provided in place of 30, and 40, these figures are for rooms about 9 x 13 feet in size, and provide for a minimum outside temperature of zero. In the case of large wards, each window may be considered as a single room, when of the same size, and the corners should be treated as corner rooms. When the rooms are irregular in shape or size, the following method may be used for determining the size of the indirect stacks.

$$S = \frac{(D \times 250) + V \times 1.3}{500}, \text{ in which} \qquad (2)$$

S = square feet of indirect radiating surface required.

D = square feet of direct surface required for warming the room, as computed by formula (1).

V = volume of fresh air required per hour for ventilation, = number of occupants × 5,000.

Example—A double bed ward (2 occupants) has 200 square feet of outside wall surface, and 30 of glass. The ceiling is warm, construction good, exposure southerly. What will be the required size of an indirect stack for both heating and ventilation?

Solution: First compute value of D, which is

$$\frac{(200 \times 20) + (30 \times 80)}{250} = 26$$

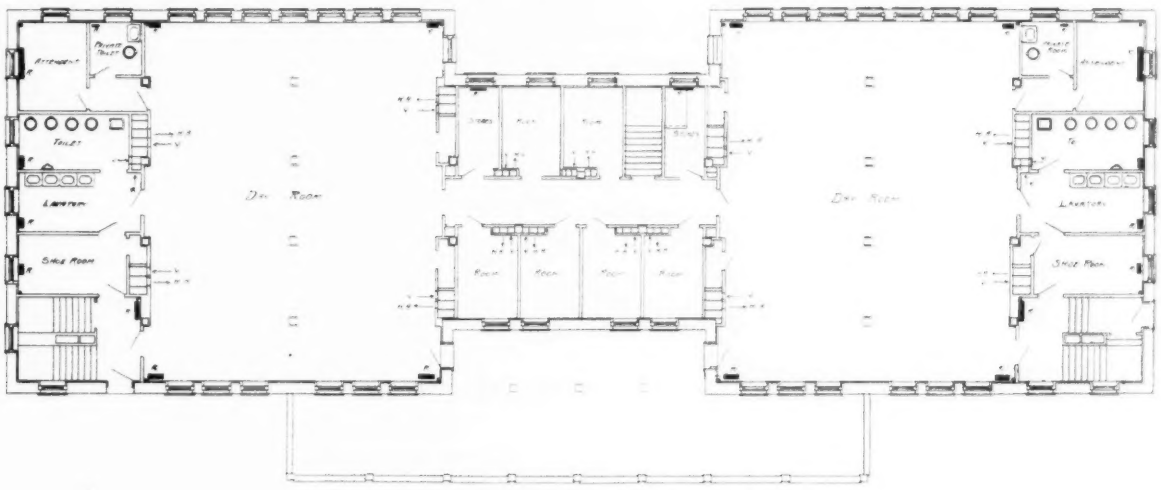


Fig. 2.

Substituting the proper values in formula (2) we have

$$S = \frac{6400 + (10{,}000 \times 1.3)}{500} = 40 \text{ sq. ft.}$$

Piping.

In most cases steam at about 20 or 25 pounds pressure is required for sterilizing, etc., and a good plan is to carry this pressure in the distributing main, reducing at each building to 1 or 2 pounds for heating purposes as may be required. This also results in smaller mains and gives an opportunity for different pressures in different buildings, if conditions call for such. Each building, with this system, has its own trap on the return, discharging into a main leading back to a vented receiver in the boiler house. In this way each building is independent of the others, there is no danger of the return from one holding back that from another, and furthermore, it is not necessary to run a separate line of high-pressure piping as is the case when the heating main is run under a low pressure.

For ordinary sized plants, high, or medium pressure mains (20 to 30 pounds) may be proportioned on a basis about ½ pound drop in pressure in 100 feet length of run.

which will call for the sizes given in Table I. Knowing the final pressure required at the end of the line and the length of run, the initial pressure required may be easily determined.

Table 1*

Size of Pipe	Pounds of steam discharged per minute	Size of Pipe	Pounds of steam discharged per minute
2 ins.	6	6 ins.	110
2½ ins.	12	7 ins.	170
3 ins.	18	8 ins.	250
3½ ins.	25	9 ins.	320
4 ins.	35	10 ins.	420
5 ins.	70	12 ins.	520

*Drop in pressure ½ pound per 100 feet length of run.

The quantities of steam in the above table are in pounds per minute. These figures may be changed to square feet of **direct** radiation by multiplying by 200, and to square feet of **indirect** radiation by multiplying by 100.

Air Supply.

There are two methods of supplying fresh air to indirect stacks; one like that shown in Fig. 1 where a separate duct is carried to each stack, or group of stacks; and second, where the stacks are placed in cold air rooms and enclosed in casings having open bottoms. When the basement is used, and finished into rooms, the first arrangement is necessary, as in Fig. 1. The objection to this is that when the air for a stack is taken from one direction only, the volume is largely dependent upon the direction of the wind. When possible, it is better to provide air chambers, having inlets upon two sides at least, and group the stacks in these. For example, in Fig. 1 the central portion of the building might be set apart for this purpose and a greater part of the stacks placed within it. Cold-air inlets should be provided in each side, of the full area required, and furnished with air checks opening inward. In this way advantage of the wind pressure would be available from two directions.

If it were desirable to retain an open passage through this part of the building, two air chambers might be provided, one on either side, with a full sized connection between the two formed by means of a false ceiling. Sometimes the basement of a ward building is only used for storage purposes, or not at all, and practically the whole space may be utilized as an air chamber. In this case, inlets may be provided on all four sides, any two of which should be equal to the total area required. With this arrangement, the steam pipes should be left uncovered in order to heat a layer of air next to the ceiling and thus prevent the floor above from becoming chilled. The inlet areas should be generous, as the air flow will be sluggish, except in case of winds, at which time the windows may be partly closed if the air flow is too great. In general, not less than 3 square inches area should be provided in the cold-air duct or inlet for each square foot of indirect heating surface.

Supply and Vent Flues.

The connections between the stacks and inlet registers are best made of galvanized iron and should have an area of 2½ square inches per square foot of heating surface for first floor rooms, and 2 square inches for the second. While the arrangement of inlet and outlets shown in Fig. 2 is often used to advantage, it is also a good plan to bring in the warm air just below the windows, by means of wall registers, when the building is in an exposed location.

The vent registers are usually placed in inside walls. The flue area may be made the reverse of the supply flues; that is, 2 square inches per foot of radiation for first floor rooms and 2½ square inches for those on the second floor.

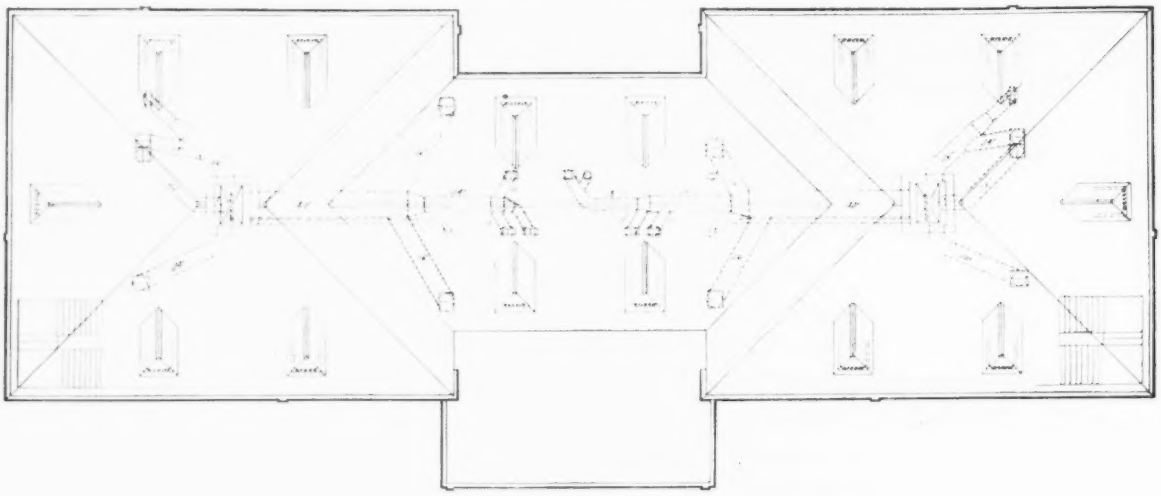


Fig. 3.

The flues should be gathered in the attic, in the general way shown in Fig. 3, the area of the horizontal ducts being equal at least to the total area of the vertical flues connecting with them. If the horizontal runs are of considerable length they should be increased from 10 to 30 per cent in size to overcome the added resistance. The main uptakes through the roof should always be heated unless steam pipes are carried through the individual flues. The area of the main outboard flues through the roof may be reduced to about 70 per cent of the horizontal ducts connecting with them. Aspirating coils, or flue heaters, should be of open pattern so as to distribute the heat evenly over the entire flue area, and may be designed on a basis 1 square foot of surface to each 40 cubic feet of air to be passed through the flue per minute.

Adjustable dampers should be placed in all cold-air inlets, and in the main vent outlets. The warm air ducts should be provided with mixing dampers for regulating the temperature of the air entering the rooms above. These are best operated by means of chains passing up the flues, and should be under the control of the nurses.

Climbing the Ladder

By "Noswad"

Chapter IX.

Most mechanics take a pride in their kit of tools—they oil and clean and sharpen them continually. Say boys, when you are on a job, watch a carpenter, if a chisel gets dull he immediately hones it. If his saw gets out of commission he at once gets to work and sets and files it. And so on with all his tools. You don't think he is trying to soldier, not a bit of it, you think to yourself, that fellow's a mechanic. And you may bet your bottom dollar he is.

You can tell what a man is by looking at his tools, whether he be a carpenter, machinist, plumber, fitter or anything else. You will perhaps say, "but a carpenter owns his own tools;" yes, so he does as a general thing; so do a number of plumbers own their tools, but take a look at the bunch of tools some fellows who call themselves plumbers, carry, and then weep.

I have been making a mental note of some of these kits for several years; where you will find one set of tools in good shape, you will find fifty sets "bum," that is the only word that will express it.

Wrenches, with the teeth all worn, that will not grip a

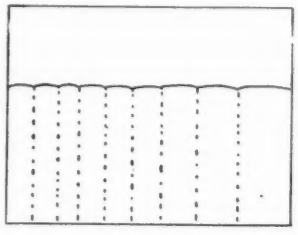


Fig. 1.

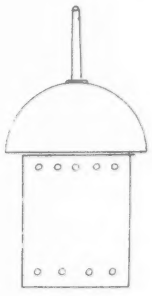


Fig. 2.

pipe without a lot of persuasion; then when they have got a grip, will not let go without a "cuss." You've all been there. Chisels that are more like a crow bar, hammers with cracked handles, or handles about six inches long. Wood chisels that resemble cold steel chisels and poor ones at that. Twist bits that will not cut wood much more iron or steel. Brace bits that will cut one hole a week. I could go down the whole long list of tools and find them all in some such condition. In fact they just about match the dirty greasy overalls of the owner. No wonder the trade has the name it has.

When I was working as a journeyman I always made a point of having a clean pair of overalls when on a job in a residence. If by some chance I did not have a clean pair, I did my work without them, rather than put on dirty ones. I always try to keep my hands as clean as possible under all circumstances. In spite of this, how often I was greeted with, "here are those dirty plumbers." I have heard these words at least a dozen times this last three months. It makes me sore. It is about time the whole craft got busy and knocked this wretched phrase on the head for good and all times.

Our work is to help people to keep clean, and make their homes sweet and clean and sanitary; yet, in this topsy-turvy world, think of the irony of it; the majority of people call us dirty. Let us all brush up and look what we really are, decent, reliable, self-respecting boys. Let us as a class make the world sit up and take notice; we can if we rty; it is only want of thought in most cases. I for one am proud of my trade, and I know most of you are. Let us all say, "Here's for clean overalls, clean hands, and a perfect kit of tools."

I will try to give you a few kinks that will help you to keep your tools in good condition and also mention a few

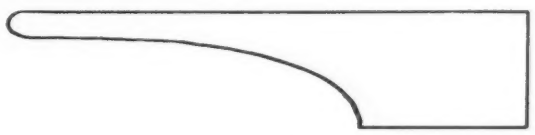


Fig. 3.

special tools that will help you to do careful and particular work.

Look over your tools at least once a week, clean and oil them well and see if any require fixing up. Maybe you will find a wrench with the jaws so badly worn that it will not grip the pipe; don't throw the wrench away but order up a new set of jaws; they will make the wrench as good as new at half the expense. It is as well to keep new jaws, both top and bottom, and also springs on hand for all the sizes of wrenches you have; you can then put them in at a moment's notice.

If a calking tool is damaged, have it repaired at the blacksmith's or if it is too far gone have him make a new one to pattern.

A small emery wheel is a necessity in every shop; with this you can grind and keep in shape all edge tools. Also have on hand an oil stone. If you do not buy your wiping cloths, make up half a dozen at a time, and work them up occasionally with good tallow, making sure the nap is thoroughly burned off of them. Rub in some powdered chalk with the tallow.

If the jaws of a brace give out, put in new ones and the brace will be as good as ever. Perhaps the handle of one of the hammers is all in; don't throw it on the scrap

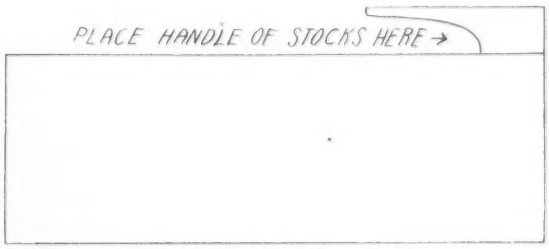


Fig. 4.

heap. Go to a hardware store where for ten cents you can obtain another handle. Choose one with a fine, straight grain, of good shape. Cut the old handle out of the eye, trim the new handle carefully, take a saw and make a cut lengthwise, in the end of handle almost the width of the hammer head. Insert the new handle in the eye, cut a wedge out of a piece of band iron, such as comes on bundles of sheet iron; any hardware store will give you a piece of this free of charge. Cut the wedge the width of the eye, sharpen one end, then take a ham-

mer and bend over the sharpened corners in opposite directions. Now take hold of the new handle and with the hammer head upwards, put in the wedge, drive home and file off clean. Don't rest the handle on the bench during this operation as this has a tendency to draw the head off the handle. Holding it in the hand tends to keep the head down solid. You can also give the other end of the

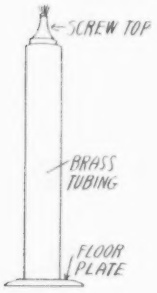


Fig. 5.

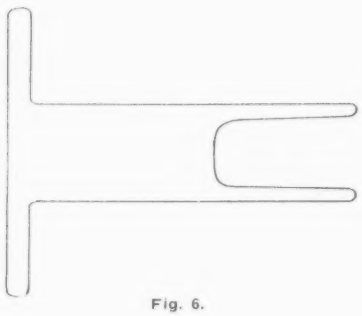


Fig. 6.

handle a tap or two on the bench when driving in the wedge.

Now take a piece of glass paper and smooth up the handle well, then rub in some linseed oil, then apply a little fine emery powder to give it a grip and you will have a better hammer than before it was broken. Having spent a little time on the hammer you will appreciate it and be inclined to take more care of it.

Pipe cutters are tools that require care. The best kind for the ordinary run of work are those with two rollers and one cutting wheel. This kind leaves no burr on the outside of the pipe, therefore allowing the dies to take hold readily. The cutters with three wheels are useful to cut a pipe in a ditch or up in between joists. That is their limit in my estimation. Most cutters are interchangable. These are the best to buy. When cutting pipe above 3/4 in. put a little oil on the pipe, right at the cut; the tool will run easier. When you get to the last turn and the pipe at the cut cracks, take off the cutter before breaking off the piece or you will often chip a bit out of the wheel.

Pipe cutter wheels are generally made too brittle these days anyway. It would be a good thing if the manufacturers would take a little more care in the tempering of

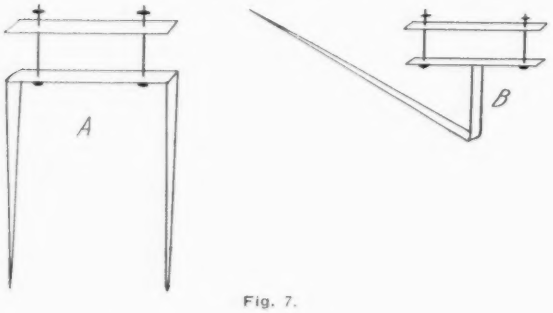


Fig. 7.

them. If the maker of one of the best known cutters would take this to heart, it would confer a favor on thousands of plumbers and steamfitters in the country. In one of my old cutters I have a wheel that has seen seven years' service and is still as good as new. One does not seem to be able to get hold of this kind now.

Oil your cutter frequently. Never throw it in the dirt or sand, this will soon ruin the best. Put it on the bench, or drive a couple of nails in the wall and hang it up by the handle.

To keep brace bits in shape, get some bed ticking and get one of your lady friends to make you a holder as sketch Fig. 1. A piece about 10-in. x 16-in. will do. Turn the bottom up about 6 inches and stitch as shown by dotted lines in sketch. This holder will save the points of the bits; it will also hold the larger twist drills.

For the smaller twist drills make a box out of two pieces of brass tube cut from lavatory or sink wastes, two pieces that will telescope. Solder a piece of brass or copper into one end of each and you will have a box that will last for years.

Cutting oil gets pretty thick in cold weather. Take an old tin can, knock a few holes in it round the top and the bottom, place a lighted candle in it and the oil can on top and the oil will be in good shape right along. See Fig. 2.

To keep the larger stocks and dies out of the dirt, and from continually falling onto the floor; take a piece of 2-in. x 4-in. and shape as Fig. 3 and nail to the right hand side of the bench. See Fig. 4.

To preserve hack saw blades, take a piece of brass or

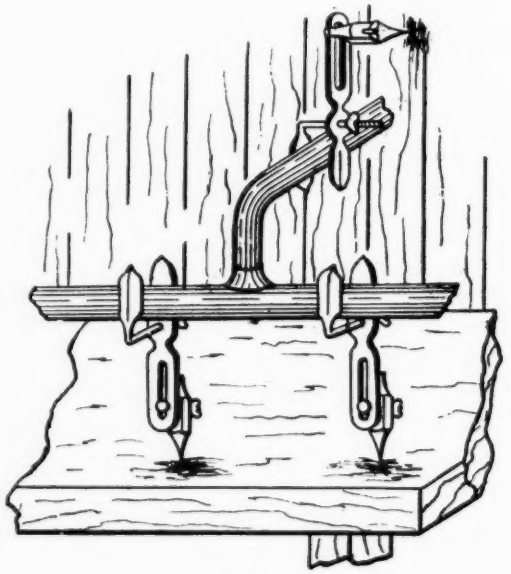


Fig. 8.

iron pipe eleven inches long, thread each end and put a cap on each thread, screw one on tight and leave the other loose. This will hold seven or eight saws. Another way is to place two blades in the frame. Two blades are not so liable to break as one. Of course you would take out one blade when using the saw.

Always carry a pair of tin snips, or shears, in the kit, and keep them sharp. To sharpen, take the blades apart and grind on the emery wheel, finish the edge on an oil stone.

A useful tool is a pair of circle tin snips about six inches long, this tool is invaluable for enlarging the holes in spun floor plates for bath-tubs and lavatories. If you cannot procure them from the hardware store any dentist will oblige you by getting a pair. Dentists use this kind of tool in their work.

A useful torch can be made out of a piece of nickel

plated waste, take a piece about seven inches long, solder a round disk of copper or brass in one end, then solder the same end to a heavy floor plate such as is used on a steam job. Obtain a zinc lamp screw top from the hardware man, solder the screw top to the other end. Roll some candle wick and insert in the burner, the roll of wick can be a foot long. Fill the body of the lamp with coal oil or any other good burning oil and you will have a torch that is cleaner, cheaper and better than a candle. See Fig. 5.

A useful blade for the hack saw is one with fine teeth specially made for cutting brass; it is tempered very hard on the cutting edge and soft tempered at the back. They can be bent but not easily broken. The ordinary hack saw blade with course teeth is useless for cutting brass tube.

Get a blacksmith to make you a basin wrench for holding basin plugs while the lock nut under bowl is being turned. See Fig. 6. Or purchase one from a supply house for twenty-five cents.

Be sure to have a strap wrench for handling nickel plated pipe and slip nuts. Such a wrench will handle pipe from one inch and upwards. For the smaller nickel plated pipe make a clamp; for ⅜-in. pipe take a ½-in. coupling, cut it in two pieces lengthwise, drive a small piece of sheet lead inside each half, down on to the threads and trim the edges of surplus lead. To use the clamp, sprinkle a little plaster of paris or rosin on the inner side of each half, place both pieces round the pipe, clamp in vice or between the jaws of a wrench. For larger size pipe use larger couplings. These clamps will not mar the polished pipe. The plaster of paris will rub off with a little waste; rosin can be cleaned off with a drop of gasoline.

Clamps for wiping joints are very useful. Several years ago I had a set made and still have them. Fig. 7. Two clamps like A and one like B. I used A to rest the pipe on and B to drive into the wall to hold the branch. I find you can now purchase an adjustable set as shown in Fig. 8.

An indispensable tool for jobbing work when tearing up floors, is a nail cutting saw. It is practically a stout hack saw blade, shaped to fit into a compass saw handle.

(To be Continued.)

SANITARY ORDINANCES IN FORCE IN MANILA.

We take pleasure in presenting to our readers the following letter from Geo. H. Guerdrum, Sanitary Engineer, of the Bureau of Health for the Philippine Islands. It was written in response to our letter to various health departments regarding the installation of latrines and supervision of amusement places, and has just reached us.

Ordinance 120 and Sec. 184 of the Revised Ordinances deal with the subject of latrines. It will be noted that under certain conditions, where there is no sewer in the street of the abutting property, latrines are allowed.

Latrine installation is approved in outlying districts only where no other means of sanitation, such as a pail conservancy system or the sanitary sewer, is available.

Manila has a very thorough system of police, health and fire supervision over public amusement places and resorts; no license is issued until the chiefs of these departments have all recommended favorably. The matter is fully covered by Sections 807 and 681 of the Revised Ordinances, as follows:

Sec. 183. Revised Ordinances. System of Receptacles Permissible until New Sewer System in Operation.—Until the new sewer system now under construction is in operation the different systems of receptacles for the collection and removal of filth in sanitary installations, to be permitted after the first day of January, nineteen hundred and seven, shall be as follows: First, movable vaults (pail system); second, dry vaults; third, filtering vaults with discharge; fourth, absorbent vaults or without discharge; fifth, aseptic vaults, absorbent or with discharge, or both absorbent and with discharge.

Sec. 184, Revised Ordinances. Plans and Specifications Gratuitous; Approval.—The engineer shall furnish printed plans and specifications of all plans approved by the Director of Health, which plans and specifications shall be furnished gratuitously to any resident applying therefor. Whenever the Director of Health shall decide that the installation of any system is not suitable, such system shall not be installed, and such system shall be installed as the Director of Health believe to be most suitable.

"Sec. 183. (Amended.) The different systems of receptacles for the collection and removal of filth in sanitary installations, to be permitted subject to the approval of the Director of Health or his authorized representative on and after the first day of August, nineteen hundred and nine, shall be as follows: First, direct discharge into the new sewer system; second, movable vaults (pail system); third, dry vaults; fourth, filtering vaults, with discharge; fifth, absorbent vaults with or without discharge; sixth, septic vaults, adsorbent or with discharge, or both absorbent and with discharge: Provided, That the first-mentioned system shall, in future, be obligatory in the case of premises abutting upon a street through which the new sewer system has been laid."

Sec. 807, Revised Ordinances. Licenses Necessary for Certain Places, Etc.—It shall be unlawful to conduct any hotel, boarding-house, tenement-house, lodging-house, tienda, store, vessel or other water craft where cooked food or easily contaminated food, meat, or fish are offered for sale; saloon, barber-shop, hairdressing parlor, massage parlor, dermatological office, or similar place; bath-house, bakery, laundry, dairy, livery stable, undertaking or embalming establishment; place where offensive or dangerous trade, occupation, or business is to be conducted; place of amusement or entertainment; dyeing and cleaning and all similar establishments; or to engage in street peddling or the practice of chiropody, unless a license has been obtained, and approved by the Director of Health.

Sec. 681. Privy Accommodations.—Every building constructed in the city of Manila, whether public or private, intended for use as dwelling quarters, or where persons are to be employed or occupied in any trade or business, or which is to be used as a place of recreation or amusement or as a place of assembly, shall be provided with sufficient and suitable privy accommodations for the number of people dwelling therein, or who may be employed, occupied, or assembled therein; Provided, that all houses of strong materials and houses of light materials costing 1,000 pesos or more shall have suitable and adequate privy accommodations on the premises, and houses costing less than 1,000 pesos, shall be provided with public or private privy accommodation satisfactory to the Director of Health. In all public buildings, theaters, factories, and other houses used as places of assembly where persons of both sexes are employed, occupied, or assembled, sufficient, suitable, and separate privy accommodations shall be provided for each sex. It shall be unlawful for any owner or agent to put any person or persons in possession of any building or any part thereof or permit people to be employed or occupied therein or to assemble therein, unless the same is suitably and sufficiently provided with privy accommodations.

DATES OF CONVENTIONS TO BE HELD IN THE NEAR FUTURE.

April 16 and 17, 1912.—Annual convention of the Pennsylvania State Association of Master Plumbers, at Philadelphia, Pa. Headquarters at the Hotel Walton. The officers of the association are: President, S. S. White, Pittsburgh, Pa.; treasurer, John H. Birchall, Allentown, Pa.; secretary, R. E. Carson, 1827 Perrysville Avenue, N. S., Pittsburgh, Pa.

April 16 and 17, 1912.—The annual convention of the Kentucky State Association of Master Plumbers, at Louisville, Ky. Headquarters will be established at the New Galt House, and the sessions will be held at the Master Plumbers' club-room. The officers of the association are: President, J. J. Fitzgerald, Lexington; vice-president, George Shardein, Louisville; secretary-treasurer, W. W. White, 606 York St., Newport, Ky.

April 23 and 24, 1912.—The tenth annual convention of the Oklahoma State Association of Master Plumbers, in Shawnee, Okla. The officers of the association are: President, W. V. Roesch, Shawnee; vice-president, W. F. Black, Enid; secretary, A. D. McMullen, Oklahoma City; treasurer, Walter Newman, Shawnee.

April 23, 24 and 25, 1912.—The annual convention of the Texas State Association of Master Plumbers, at Fort Worth, Tex. The arrangement committee for the convention is composed of the following master plumbers: W. E. Thatcher, chairman; P. E. Fosdick, Fred Robbins, Wm. Blevins and W. H. Payne, all of Fort Worth.

May 6 and 7, 1912.—The annual convention of the Alabama State Association of Master Plumbers, at Montgomery, Ala. The officers of the association are: President, Chris Bailey, Montgomery, Ala; vice-president, Hamilton Hines, Birmingham, Ala.; treasurer, W. W. Wilson, Ensley, Ala.; secretary, J. E. Fuller, 112 Bibb Street, Montgomery, Ala.

May 7, 1912.—The annual convention of the West Virginia State Association of Master Plumbers, at Clarksburg, W. Va. The officers of the association are: President, W. A. Wiedebusch, Fairmont; secretary-treasurer, E. C. Wiedebusch, Morgantown.

May 7 and 8, 1912.—The annual convention of the New Jersey State Association, at Asbury Park, N. J. The officers of the association are: President, George Turner, Asbury Park; secretary, H. F. Baillet, 48 Chapman Place, Irvington, N. J.

May 13, 14 and 15, 1912.—The annual triple convention of the American Supply and Machinery Manufacturers' Association, the National Supply and Machinery Dealers' Association and the Southern Supply and Machinery Dealers' Association at Norfolk, Va. Headquarters will be established at the Monticello Hotel. F. D. Mitchell, 309 Broadway, New York City, is secretary-treasurer of the American Supply and Machinery Manufacturers' Association.

May 14-17, 1912.—The sixth annual convention of the Master Boiler Makers' Association, at Pittsburgh, Pa. Headquarters will be established at the Fort Pitt Hotel.

June 4, 5 and 6, 1912.—The seventh annual meeting of the American Society of Inspectors of Plumbing and Sanitary Engineers, in St. Louis, Mo. The officers of the society are: President, Martin Conroy, St. Paul, Minn.; first vice-president, John Hefferman, Houston, Tex.; second vice-president, Lawrence J. Lawler, Pittsburgh, Pa.; secretary and treasurer, Thos. J. Claffy, City Hall, Chicago.

June 10-13, 1912.—The twenty-fourth annual convention of the National Association of Master Steam and Hot Water Fitters, at Atlantic City, N. J. Headquarters will be established at the St. Charles Hotel. The officers of the association are: President, Edward B. Denny, Newark, N. J.; vice president, John T. Bradley, St. Louis, Mo.; treasurer, Juan A. Almirall, New York City; secretary, Henry B. Gambers, New York City; sergeant-at-arms, John C. F. Trachsel, Philadelphia.

June 25, 26 and 27, 1912.—The fourth annual meeting of the National District Heating Association, in Detroit, Mich. The officers of the association are: President, A. D. Spencer, Detroit, Mich.; first vice-president, Warren Partridge, Springfield, Ill.; second vice-president, R. D. de Wolf, Rochester, N. Y.; third vice-president, Cadwallder Evans, jr., Pittsburgh, Pa.; secretary-treasurer, D. L. Gaskill, Greenville, O.

July 12 and 13, 1912. The Colorado Master Plumbers' Association will hold its convention in Cheyenne, Wyo. This association includes master plumbers of Colorado, New Mexico, Wyoming and Utah. The president of the association is Chris. Irving, 1525 Larimer St., Denver, Colo.

July 16, 17 and 18, 1912.—The 30th annual convention of the National Association of Master Plumbers, in Salt Lake City, Utah. The officers of the association are: President, Alfred C. Eynon, Canton, O.; vice-president, Frank J. Fee, New York City; secretary, Louis E. Deuble, 312 N. Market St., Canton O.; treasurer, William McCoach, Philadelphia.

MASSACHUSETTS MASTER PLUMBERS' ANNUAL MEETING.

Special Telegram.

Boston, Mass., April 10.—The annual convention of Massachusetts State Association of Master Plumbers was held in this city today with a good attendance. The following officers were elected for the ensuing year: President, James S. Cassedy, Cambridge; vice-president, Robert Robertson, Beverly; secretary, John J. Vogel, Boston; treasurer, O. S. Kendall, Worcester; delegates to the national convention in Salt Lake City: James S. Cassedy, Cambridge, and T. J. Ryan, Springfield; alternates: D. G. Finnerty, Boston, and Robert Robertson, Beverly. National Vice-president Frank J. Fee, of New York City, attended the convention.

BOSTON MASTER PLUMBERS' ANNUAL BALL.

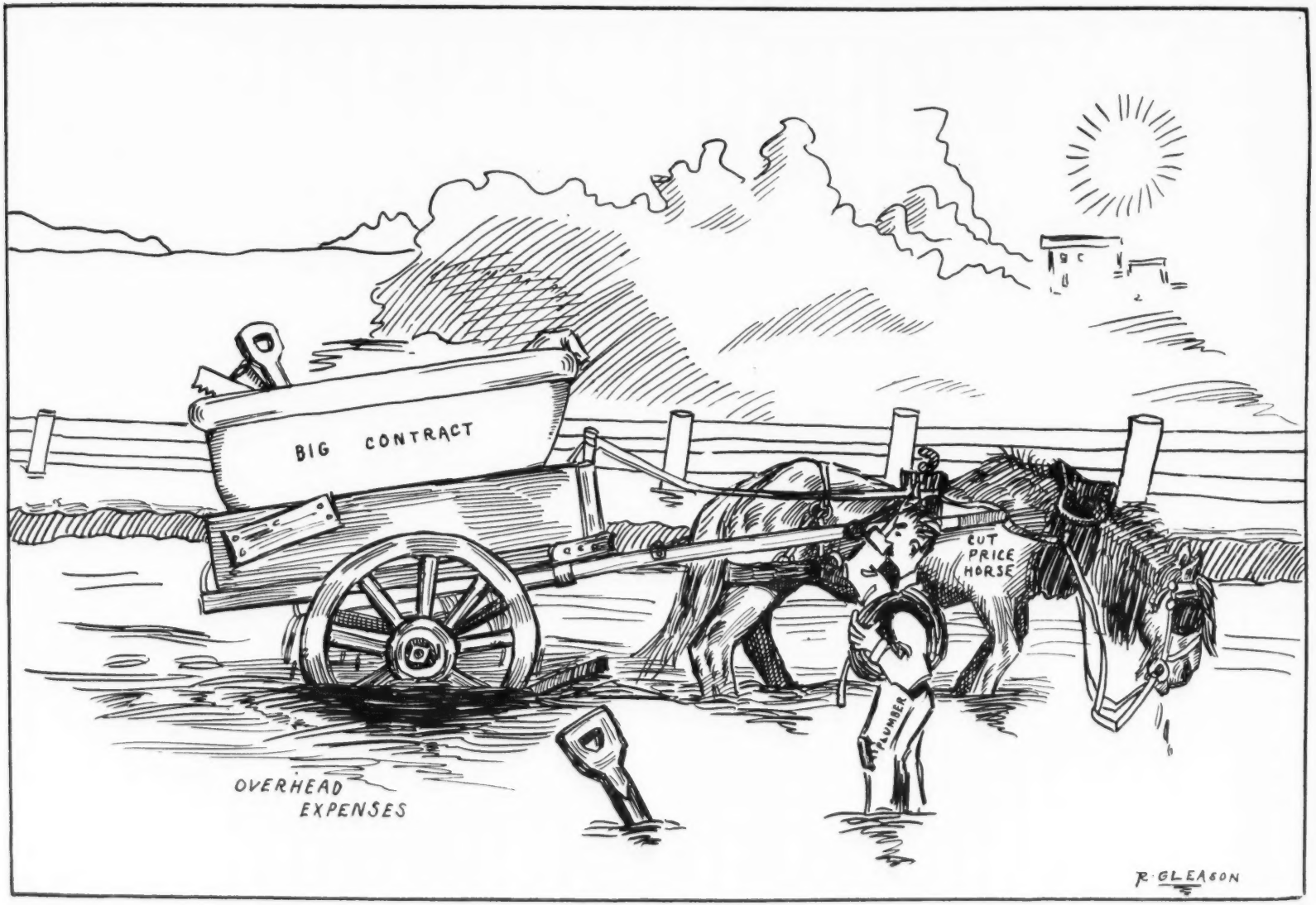
Invitations have been issued for the twenty-ninth annual ball of the Master Plumbers' Association of Boston and Vicinity to be held in Horticultural hall on Wednesday evening, April 17. Dancing will be in order from 8 to 2 with a banquet at intermission. McGee's orchestra will furnish the music and A. F. Boothby is to cater. The number of responses already received assure the success of the affair.

Bred for the Bishop.

"Look here, Dinah," said Binks, as he opened a questionable egg at breakfast, "is this the freshest egg you can find?"

"Naw, suh," replied Dinah. "We've done got a haff dozen laid diss mornin', suh, but de bishop's comin' down hyar next month, suh, and we's savin' all de fresh aigs for him, suh."—Harper's Weekly.

"Domestic Engineering" Cartoon on "Dangers of Underestimating."—LXII.



Stuck in the Mud.

If you want to possess a special proof of this or any other of our cartoons, let us have your request at once. We have many applications for our cartoons for framing and want to take good care of all demands made.

QUESTIONS AND ANSWERS

WHAT CAUSED THE BOILER SECTIONS TO CRACK?

Editor "Domestic Engineering":—The accompanying sketch shows the arrangement of two low pressure one pipe steam jobs. These jobs are installed exactly alike in two houses next to each other. Both boilers were cracked the same day when the thermometer was about four degrees below zero. We were called in to ascertain the cause of the trouble and the following is what we found, as you will note from sketch:

In house No. 1 they noticed that when the temperature lowered to around freezing when a good fire was needed in the boiler, the water flowed from the air valves on the ends of the mains. The owner arose about 6 o'clock in the morning while the house was pretty cold, turned the drafts on his boiler and shook up the fire. He had been up stairs but a few minutes when he heard something in the cellar and found that the fire pot section and middle section of his boiler were cracked and water was flowing through the cracks.

In house No. 2 they did not notice water flowing from air valves or mains, but it ran from stuffing box on first floor radiators, in considerable quantity. When they turned on the drafts and shook up the fire about 11 o'clock the same day, they heard steam escaping and on examination found the boiler was cracked. The owner replaced the broken sections and when he started his fire the water left the boiler. It is our opinion that the head of water at the end of the main is insufficient in severe weather to balance the pressure in the boiler and that water is forced back up the return and into the main, thus leaving the castings in boiler, that should be below the water line, exposed to intense heat, which we believe cracked the boilers. You will note on the sketch that under normal conditions there is only about 11 ins. of head, and owing to the fact that water flowed from the air valves on the main in one house, and from the radia-

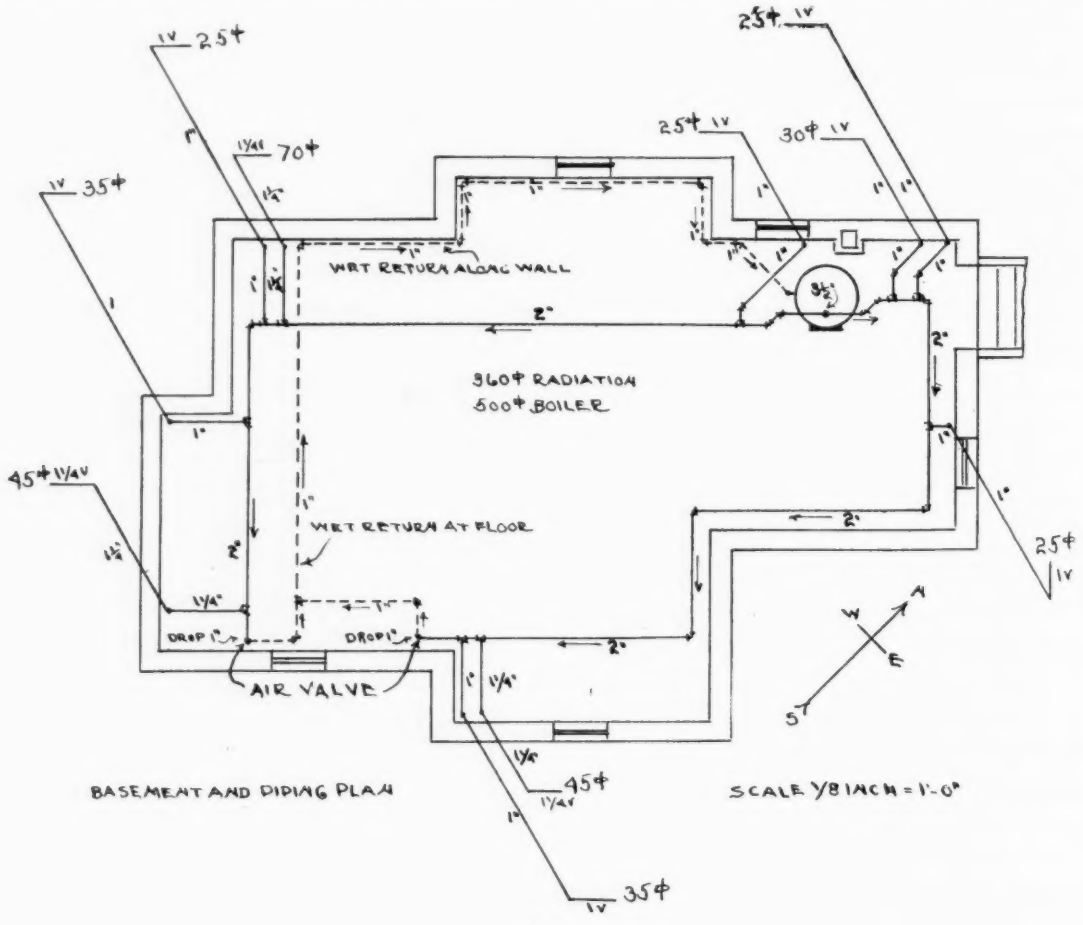


Fig. 1.

tors on first floor in the other, at times when temperature was low, we believe that this is the main cause. Will you kindly favor us with your opinion in the matter and state whether or not the boilers could have been cracked under these conditions?

Louisville, Ky. S. & C.

The trouble may be due to a stoppage in the one inch wet return. This is shown in Fig. 1 as dropping to the floor and continuing around the wall to the boiler and

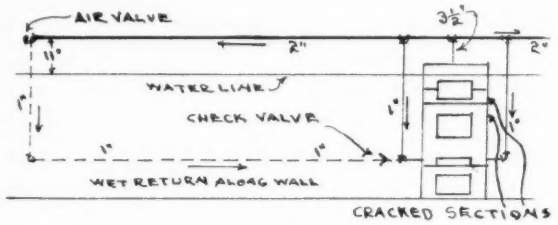


Fig. 2.

then rising to same, which makes a very nice pocket to collect any dirt which may be in the piping, while in Fig. 2, one is led to believe it runs directly back to the boiler. Fig. 1, we believe, shows the way it is installed. Making this wet return one inch, with the number of ells shown in it, was a bad mistake; it should have been one and one-half inch. Stoppage may be due to core sand or dirt which got into the piping during installation or some other obstruction. The two inch mains are ample to give a nice working job. Unless the wet return is underground, we hardly think a check valve is required on the return near the boiler, as shown in Fig. 2. The value of the one inch equalizing pipes shown at the boiler in Fig. 2, is very little for the reason that if the boiler is foaming or priming badly, due to the boiler being dirty, the water will be carried up into mains, faster than the one-inch pipes can handle it, and that is practically what happened. Fig. 3 shows a better method to employ if the boiler has a tendency to lift water into the mains or has an unsteady waterline. What we believe to have taken place when the boilers were cracked, is this; A stoppage in the wet return, prevented the condensation from returning to the boiler, then, the steam condensing in the radiators was held there by the boiler pressure during the heavy firing, thus lowering the waterline in

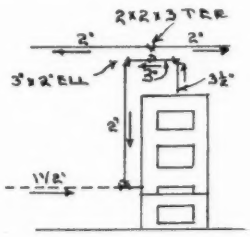


Fig. 3.

the boiler. This would allow for a portion of the boiler being subjected to the direct heat of the fire, (it was the upper part of the boilers which cracked, as your sketch indicates) and upon the fire dying down, the water in the radiators being relieved of the boiler pressure which was holding it there, returned to the boiler through the supply mains, subjecting the boiler sections to a contraction strain, with the result that the sections were cracked. We are of the opinion that this is what happened, although a personal inspection of the plants might show other reasons. From past experiences however, we believe, our opinion is right. Even if your one inch wet return is not stopped, foaming might have happened, which resulted in the water being lifted into the mains as spoken of, during sudden or heavy firing. We believe it will be policy to clean the boilers by blowing off under pressure. This may have to be repeated several times before the boilers are entirely freed from the grease and oil. If you had dripped the boilers as shown in Fig. 3, and had made the wet return one and one-half inches, we are of the opinion that you would have had no trouble. Your branches to some of the radiators are entirely too small to give good results. The branch to the 70 foot radiator should have been one and one-half inches, and the rest of the branches one and one-quarter inches. The 45 degree ells in the branches near the boiler should have been omitted. We presume branches are taken from the top of mains with a 45 or 90 degree ell, although Fig. 1 would lead one to believe they are taken out of the side. We are of the opinion that you are inviting trouble when you put a one inch valve on any radiator over 25 square feet, or a one and one-quarter inch valve on a radiator over 60 square feet. The fact that you only have 11 inches difference between the waterline in the boiler and the branch to the last radiators, is one more convincing fact that you will need a one and one-half inch wet return. After carefully considering the above statements, we believe you will be able to locate your trouble.

CONTRACTS AWARDED.

Fort Wayne, Ind.—The Loeffler Plumbing Co. has been awarded the contract for the plumbing and heating in the new addition to the Anthony hotel.

Pittsburgh, Pa.—Marks & Stessler have been awarded the contract for the installation of plumbing, heating and lighting systems in the Densinger Broom Factory in this city. The contract amounts to about $1,000.

St. Peter, Minn.—Al. J. Potts & Co. have secured the contracts for plumbing and heating the residences of William Fields and J. B. Whitcomb, both in North Mankato.

Hazelton, Pa.—J. Woodring & Co. have secured the contract for the plumbing and heating in the county industrial home buildings.

Mason City, Ill.—J. D. Wilson has been awarded the contract for the plumbing and heating in the new county farm building. The consideration is $3,085.

Chicago, Ill.—The Hanley-Casey Co., 410 W. Ohio St., has been awarded the contract for the heating of the Asylum at Bartonville, Ill. The contract amounts to $45,200.

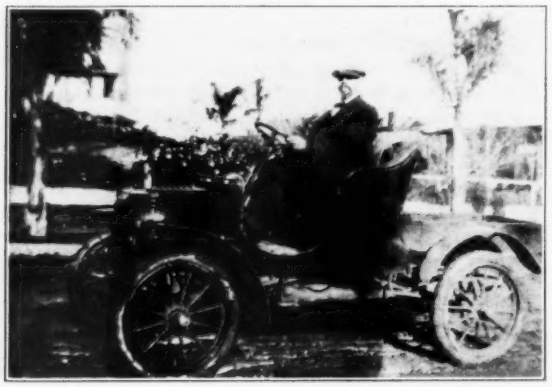
Clarksburg, W. Va.—The East End Plumbing Co., 342 East Pike Street, has secured the contract for the installation of plumbing, heating and lighting systems in the new $10,000 residence of A. Grantano, at Grasselli, W. Va. The consideration is $1,435. This company has also been awarded the contract for the installation of plumbing, heating and electric wiring in the South Side Public school building at Grafton, W. Va., at its bid of $790.

Bismarck, N. Dak.—Grambs & Peet have been awarded the contract for the installation of plumbing, heating and ventilating systems in the new federal building which is to be erected here in the near future.

SEPTIC TANK SEWAGE DISPOSAL AT SAN DIEGO, CAL.

By J. W. Wilson.

Owing to the rapid influx of people wishing to make San Diego, Cal., their permanent home, we find that it is impossible for the city to construct sewers fast enough to accommodate all. The condition of soil varies from 4 feet of sandy loam in some few localities to adobe, the non-absorbent kind, in others or a hard pan that lies within three or four inches of the surface in some places and rivals the hardest of concrete; then add to these the irregularity of surfaces varying from level to 45 degrees or more of incline and the reader will have a fair idea of our difficulties in treating house drainage and sewage by means of the septic tank. We have, however, the advantage of a nearly everyday warm sunshine which gives us a temperature that is very beneficial in producing septic action.



On the Way to a Septic Tank Job.

On the Job, Digging Tank Pit and Tile Trenches.

A large part of the city is provided with sewers that empty into the harbor bay, which is so land locked that there is already a sufficient accumulation of sludge to make portions of the bay very unpleasant, owing to the odors produced. It is thus selfevident that this city has a problem to consider in the matter of sewage disposal.

Being familiar with the septic tank, it suggested itself to me as the remedy that each building could be provided with a septic tank at small cost, which would destroy the solids in the sewage and discharge the purified effluent into the sewers thus eliminating all of the objectionable features, as this effluent would not in any way be objectionable when turned into the salt water of the bay, because coming from septic tanks, constructed in accordance with scientific practice it would be as clear to look at as spring water, and would carry nothing that could be objectionable. This, I know, because I have constructed more than 100 septic tanks in this city and vicinity within the last fourteen months, and they are turning out such an effluent.

I have not had occasion to alter or clean out any of these tanks in order to get these results, and I have thus proved that when tanks are properly constructed sludge does not increase. I have opened a few of my tanks after months of use and find also that there is no scum, which shows that scum is not essential.

My system is a three-compartment tank constructed with cement sewer pipe having cement bottoms and tops sealed against outside air except in the first compartment.

Where canyons are available for rapid carrying away of effluent I permit some to run freely away; in other cases I use drain tiles distributed about the garden or lawn thus furnishing irrigation which in this country is a double benefit, as it also disposes of the overflow.

I am indebted to Geo. Jacob Davis of the University of Wisconsin, for many valuable suggestions.

BUSINESS VENTURES.

Carrington, N. D.—John Rudd has opened a plumbing establishment on Main street in this city.

Auburn, N. Y.—James G. Copp has opened a plumbing and heating establishment at 17 Dill street.

Freeport, Ill.—Green Bros. have opened a plumbing and gas-fitting establishment in the East End in this city.

Portsmouth, O.—Charles Fligor has opened an up-to-date plumbing establishment at 1411 Findlay Street.

Knoxville, Ia.—Ralph H. Porter has opened a plumbing establishment here.

Binghamton, N. Y.—John G. O'Neil and J. R. Murphy have formed a partnership under the name of O'Neil & Murphy and have a modern plumbing establishment at 4 Hawley Street. Both men are practical plumbers.

Springfield, Ill.—Beekman & Franz is the style of a new firm which has just been incorporated with a capital of $10,000 to conduct a plumbing and heating business. The incorporators are H. T. Beekman, Fred Franz, jr., and L. G. Eberly.

Aberdeen, S. D.—Carl Risager, formerly a member of the plumbing firm of Kelly & Risager, has opened a plumbing establishment in the Kelly Bldg., 210 South Lincoln street.

Richmond, Va.—The Carle-Boehling Co. has been incorporated to conduct a plumbing business. The officers of the company are: President, W. E. Carle; vice-president, Henry Holzgrefe; secretary and treasurer, J. G. Boehling; all of Richmond.

Durham, N. C.—The Dermott Heating Co. has been incorporated with a capital of $25,000 to conduct a heating business. The incorporators are: J. V. Dermott, George McCrackin and E. J. Schantz.

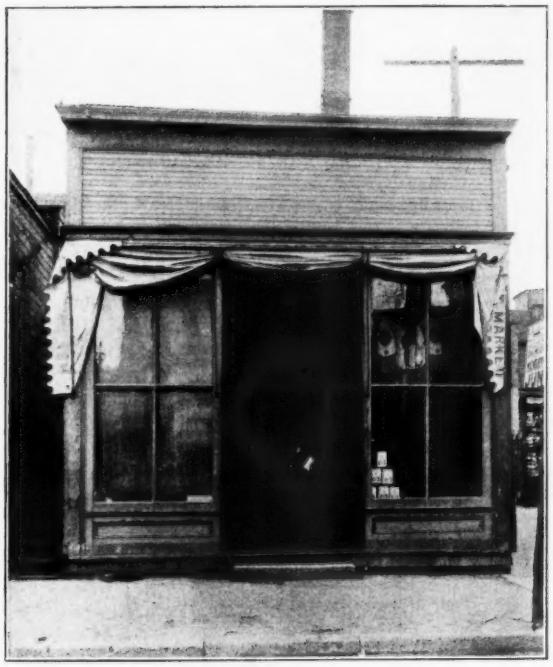
Springfield, Mo.—J. H. Patterson and A. Colie Jarrett have formed a partnership under the name of Patterson & Jarrett and opened an up-to-date plumbing and heating establishment at 317 Pickwick Street.

Where Progress and Prosperity Prevail

In the Remarkable Growth of the Leighton Supply Co. the Advancement of Sanitary Plumbing Requirements and the Whole Plumbing Industry is Co-incident

The growth and development of the Leighton Supply Co., of Ft. Dodge, Iowa, has been nothing short of remarkable. At the same time this remarkable development of a company dealing exclusively in plumbing, steam and hot water supplies, is but an indication of the rapid development in all sections of the civilized world of the basic notion of the idea of adequate sanitation, by modern plumbing methods and equipment.

The business of the Leighton Bros. Co. had its inception in 1894. The dimensions of the first building occupied by this concern was sixteen feet wide by sixty feet deep. For a period of three years—from 1894 to 1897—the company conducted a retail plumbing and heating business. From the very beginning this business was a



Building Occupied by Leighton & Co. from 1894 to 1897.

success. At the end of this period, the first stages in the development of the Leighton Bros. Co. had been accomplished and they were compelled to move to a larger building, twenty-four feet by one hundred feet, with basement. This building was occupied from 1897 to 1906, a period of nine years. In this location the growth of the business was more extensive than ever, and in 1900 the business was so fully developed that it was necessary to conduct a jobbing business in plumbing supplies in order to meet the requirements of their trade.

During the year 1900 the entire arrangements of the old business were transformed into a general plumbing supply jobbing proposition. The work during this year included the closing up of all the retail business and the finishing of all contracts on hand.

In 1906 the jobbing business of the company was so extensive that another change of location was necessary. The third building occupied by this concern offered exceptional facilities for the conducting of an extensive plumbing and heating supply business. While located in

E. I. Leighton, General Manager, The Leighton Supply Co.

this building many new ideas for the extension of the business were incorporated; these ideas including every conceivable arrangement for serving plumbing and heating contractors to the best advantage. The broad policy of the concern in its relationship with its patrons was of such a marked degree while the business was conducted in its third location, that its further development and extension would apparently require another building offer-

Building Occupied by Leighton & Co. from 1897 to 190[illegible].

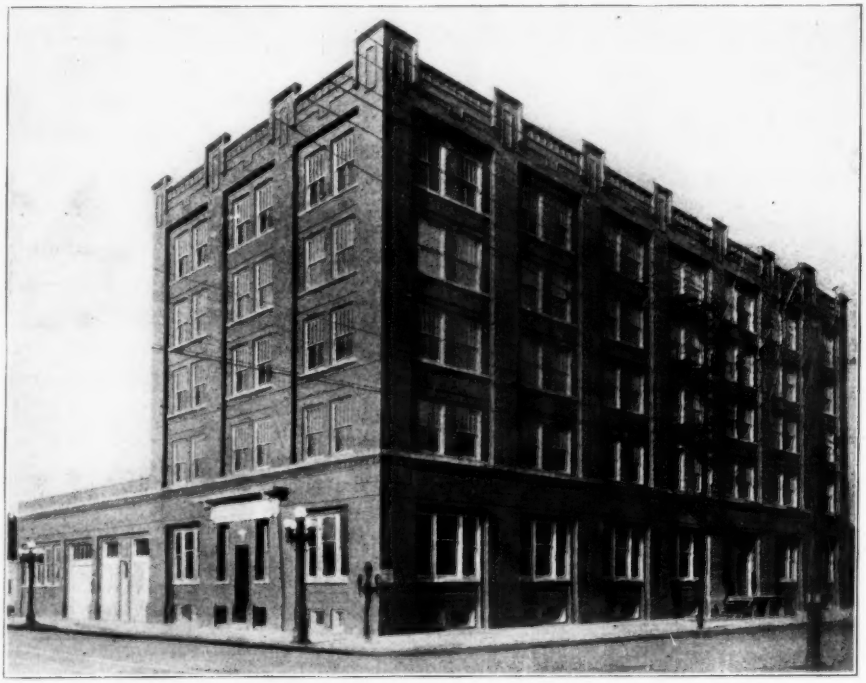
Third Stage in the Development of a Business that Grew from Retail to Wholesale.

ing still greater facilities. Consequently, on January 1, 1909, the concern was reorganized to be known thereafter as the Leighton Supply Co. At this time the capital stock was largely increased and additions to the sales force were made. After the reorganization of the company the business grew so rapidly that it was soon decided the company should erect a permanent new home. This new home was completed early in December, 1911, and on Jan. 1, 1912, the stock and business of the company was transferred to its present location.

The new buildings are so situated as to afford every possible shipping facility and include the most modern facilities for the receiving of merchandise. Four carloads of goods can be "spotted" at the building simultaneously. The pipe and well casing shipments received are unloaded by an overhead trolley system direct from the car into the warehouse. Other merchandise is unloaded direct from the cars into the receiving room in the rear of the building, and is taken direct from there on to the large freight elevator and distributed on different floors.

The arrangements of the interior of the building include display rooms with every modern advantage. The general and private offices of the company are located on the first floor of the building and the equipment of these offices are second to none in the west. The offices also include a waiting room which offers customers every convenience and comfort.

E. I. Leighton, general manager of the Leighton Supply Co., has built up the present business of that concern by perseverance and hard work and a square deal



New Home of the Leighton Supply Co., Completed in December, 1911.

to every one. At the age of eighteen, Mr. Leighton arrived in Ft. Dodge, Iowa, from a farm twenty miles west of that city, and immediately went to work for an uncle in a hardware store to learn the tinner's trade. After an experience of three years, he embarked in the retail hardware business in a firm that was first known as Arthur & Leighton. This business was conducted for a period of four years, at which time the original plumbing and heating business of Leighton & Co. had its inception. The retail plumbing and heating business of Leighton & Co., was owned by E. I. Leighton and L. L. Leighton. This partnership was conducted for fifteen years until the organization of the Leighton Supply Co. on Jan. 1, 1909. At this time L. L. Leighton retired from the company and settled in a new home at Seattle, Wash.

One of the Display Rooms in the New Home of the Leighton Supply Co.

Mr. Leighton states that the growth and development of this business is merely coincident with the rapid development of requirements for adequate sanitary plumbing and efficient heating equipments throughout the middle west. The demands for sanitary plumbing equipments have in many instances been marked by the development of other phases of the industry.

BUSINESS CHANGES.

Princeton, Ill.—Robert Bradbees has purchased Fehr Bros.' plumbing business, and he is making arrangements to move it into the Papke building on West St. Paul street.

Memphis, Mo.—T. H. Warwick, of the plumbing firm of Courtney & Warwick, has purchased the interest of his partner, J. C. Courtney, in that business.

Kinsley, Kans.—J. T. Wilson has purchased the business of the Kinsley Plumbing Co.

Wyoming, Ill.—Jesse Pierson has sold his plumbing business to the firm of Brown & Upperman.

Humboldt, Tenn.—The Johnson-Lannom Co. has purchased C. W. Albright's plumbing business.

Van Buren, Ind.—Floyd Miller has sold his plumbing business to Calvin Case.

Auburn, N. Y.—Robert O. Jones has purchased the plumbing business of D. A. Donovan at 43 North street.

Oskaloosa, Ia.—Ralph H. Porter has sold his interest in the plumbing firm of Wells, Porter & Stump, 212 High Avenue West, to his partners Walter Wells and William Stump, who will continue the business at the old stand. Mr. Porter has gone to Knoxville, Ia., and opened a new establishment on his own account.

Brainerd, Minn.—Harry Belmont, William Maley and J. J. Egan have formed a partnership under the name of the Central Heating & Plumbing Co. and have an up-to-date heating and plumbing business at 502 Front St.

CORRECTION.

A few of those regrettable bugbears of the editorial profession called "Typographical Errors" for want of a better name, inadvertently crept into the article entitled, "Evidence of Superiority of the Thermostatic Radiator Trap by Comparative Analysis," published in our issue of March 30th.

In the first line the word "not" should have been inserted between the words "would" and "be."

In the second column on page 283, eight lines down from the top, and just after the word "calculated" should have been inserted the clause "by measuring the difference between the weight of the water displaced."

Johnny—Give me a quarter's worth of canary-seed.
Grocer—Is it for your mother?
Johnny—No, of course not; it's for the bird.—Exchange.

News of the Wholesalers and Their Products

Improvement in Manufacturing Establishments Noted—The National Tube Co. Increases Its Capital Stock—Other News of Personal and Business Interest in the Trade

THE DETROIT RANGE BOILER CO. IMPROVES ITS PLANT.

The Detroit Range Boiler Co., Detroit, Mich., is installing a large amount of new machinery in its plant at 619 Twenty-fourth street in that city.

WILL DEAL IN PLUMBING SPECIALTIES.

American Plumbing Supply Co., of Chicago, Ill., has been incorporated with a capital of $1,000 to deal in plumbing specialties. The incorporators are: Michael B. Roderick, E. M. Evans and Lee Cohn.

WILL MANUFACTURE PLUMBING SPECIALTIES.

The Hillen Manufacturing Co., Louisville, Ky., has been incorporated with a capital of $20,000 to manufacture plumbing specialties. The incorporators are George P. Hillen, Oscar C. Hillen and William F. Hillen.

THE ALLYNE BRASS FOUNDRY CO. IN NEW LOCATION.

The Allyne Brass Foundry Co., of Detroit, Mich., has moved its factory and offices from 777 Bellevue avenue to 207 Crawford avenue, where it has three times the space it had in the old location. The new plant is being equipped with up-to-date machinery and every effort is being made to make it one of the most modern brass plants in the country.

WOLVERINE BRASS WORKS MAKING EXTENSIVE IMPROVEMENTS.

The Wolverine Brass Works, of Grand Rapids, Mich., are building a new foundry, 50 x 200 feet, and erecting a five-story addition to their plant. This new addition will be of concrete and steel construction, 50 x 200 feet, and it will be equipped with a gymnasium and other features for the comfort and convenience of the concern's employees. It is planned to have these new buildings completed by October 1, 1912.

NATIONAL TUBE COMPANY TO INCREASE CAPITAL.

The United States Steel Corporation's subsidiary, the National Tube Co., itself a subsidiary of the Federal Steel Co., is about ot increase its capital stock from $9,000,000 to $13,000,000. The stock issue, it was explained this week, is to be entirely an inter-company operation, since the additional $4,000,000 of stock is to be purchased at par by the Federal Steel Co., which already owns all of the outstanding stock of the tube company. Only a few days ago an issue of $10,000,000 bonds by the National Tube Co. was announced in conjunction with issues of $15,000,000 by the Indiana Steel Co., and $5,500,000 by the Illinois Steel Co., all subsidiaries of the United States Steel Corporation. Judge Elbert H. Gary, chairman of the corporation, says: "Proceeds of the $10,000,000 bonds sold by the National Tube Co. and of the issue of additional stock will be used in liquidating loans due by the National Tube Co. to the United States Steel Corporation and other subsidiary companies of that corporation for moneys borrowed to pay for actual outlays for additions and extensions and for working capital. The National Tube Co. will thereupon have no floating debt. Its current assets are largely in excess of all current liabilities."

PERSONAL MENTION.

John Kelly and son, of Thomas Kelly & Bros., Chicago, are spending the month of April on an extended pleasure tour on the Pacific coast and do not expect to return until May 1st.

TWO LARGE MANUFACTURING CONCERNS CONSOLIDATED.

A holding company, to be known as the Greenfield Tap & Die Co., of Greenfield, Mass., with a capital of $1,000,000 preferred stock and $1,000,000 common stock, was organized in Boston, April 2d. The new company will control the Wiley & Russell Mfg. Co. and the Wells Bros. Co., both of Greenfield, the two largest manufacturing industries in town. Turner, Tucker & Co., of Boston, secured an option recently for two thirds of the capital stock of the Wiley & Russell Co., the option price being $600,000. This is about $1,800.00 a share. Charles P. Russell, who is the president and treasurer of the Wiley & Russell Mfg. Co., established the business many years ago. He is now 72 years old and desires to retire from active business. After securing the option on the Wiley & Russell Mfg. Co., Turner, Tucker & Co. formed a merger of the Wiley & Russell Mfg. Co. and the Wells Bros. Co. The officers elected are as follows: President, F. O. Wells, of Greenfield; vice-president, W. M. Pratt, of Greenfield; treasurer, F. H. Payne, of Boston; the above and J. W. Stevens, of Greenfield, A. C. Dutton, of Springfield, J. H. Drury, of Athol, and W. J. Carlin, of Boston, are the directors.

HIGH RECORD EXPORTS OF MANUFACTURES.

Manufactures exported in February, 1912, exceeded in value those of any earlier February, and the total for the 8 months ending with February was also greater than in any corresponding 8 months of preceding years. The total value of manufactures exported in February was 82½ million dollars, against 72 million in February 1911, 62 million in February 1910, and 50 million in February 1909. For the 8 months ending with February the total was 639 million, against 571 million for the corresponding months of 1911, 491½ million for the same months of 1910, and 420 million in the corresponding months of 1909. Should the rate of increase over last year's figures reached by the 8 months ending with February continue during the remaining 4 months of the fiscal year, the total value of manufactures exported in the year ending June 30, 1912, would exceed 1 billion dollars. The total value of manufactures exported for the year ending June 30, 1911, was 907 million dollars, and as the gain in the 8 months thus far recorded amounts to 68 million dollars, it seems probable that the

gain for the complete fiscal year will be fully 100 million dollars, bringing the total value of manufactures exported to foreign countries for the first time above the billion-dollar line. A total of more than 1 billion dollars' worth of manufactures passed out of Continental United States in the calendar year 1911, but this included shipments to our own noncontiguous territories, while the present indications are that the total to foreign countries alone for the year which ends June 30, 1912, will exceed 1 billion dollars in value.

This increase of 10½ million dollars in exports of manufactures in the month of February, and of 68 million in the 8 months ending with February is divided between the two great groups, "Manufactures ready for consumption" and "Manufactures for further use in manufacturing." The group "Manufactures ready for consumption" shows an increase of about 7 million dollars in February, and about 48 million in the 8 months ending with February; while the group "Manufactures for further use in manufacturing" shows a gain of about 3½ million for the month of February, and 20 million in the 8 months ending with February.

About one-third of the increase occurred in iron and steel manufactures. The total value of iron and steel manufactures exported in the 8 months ending with February 1912, was 164 million dollars, against 142 million in the same months of last year, and for the single month of February, nearly 22 million dollars, against 18½ million in the same month last year.

In the meantime imports of manufactures show a slight reduction when compared with the corresponding imports of last year. The total value of imports of manufactures in February, 1912, was 49 million dollars, against 50 million in February, 1911, and in the 8 months ending with February, 1912, 439 million against 446 million in the corresponding months of the preceding year. Finished manufactures show a material decline in the imports of the 8 months ending with February, amounting to 248 million dollars in value, against 256½ million in the same months of last year, while manufactures for further use in manufacturing show an increase, being in the 8 months ending with February, 1912, 191½ million dollars in value, against 189½ million in the same months of 1911.

ART BRASS COMPANY ISSUES NEW CATALOGUE.

A handsome and artistically arranged new catalogue has been issued by the Art Brass Co., of New York. This book is catalogue "C" and supersedes all previous catalogues and booklets. Catalogue "C" contains handsomely printed illustrations of all the Art Brass Company's products.

THE NEW SERVANT.

"The New Servant" is the title of a new booklet issued by the H. Mueller Mfg. Co., of Decatur, Ill. The subject matter of this booklet shows the Mueller Colonial self-closing faucet to be "the real servant." In the booklet it is stated that water is not as free as air, and a comprehensive table shows how millions of dollars are wasted each year through the useless and extravagant waste of water which goes on everywhere—in the home, the hotel, the office building, the school and the public institution. The facts set forth are both interesting and instructive. Furthermore, there is illustrated and explained the Mueller Colonial self-closing work which shows some important buildings where "the new servant" is used successfully and economically.

A PLUMBING SALESMAN WHO IS "SOME" FISHERMAN.

Oscar Vodisch, erstwhile representative of the Rundle-Spence Mfg. Co., of Milwaukee, in territory embodying the states of Illinois and Iowa, is exhibiting to his friends among the plumbers the very latest ideas in fishing tackle, together with a photograph that is reproduced in this column, as an illustration of how he will spend his summer's vacation. The stories of Mr. Vodisch's success as a fisherman have been told to the plumbers in nearly every city in Illinois and Iowa. These "fishing" stories are told, of course, to the detriment of Mr. Vodisch's companions shown in the picture, who are "Gil" Price, of the Simmons Mfg. Co., on the left, and

At the Right of the Picture is Oscar Vodisch—He Spends His Vacation Fishing.

brother Chris Vodisch, wholesaler of cigars, in the center. Mr. Vodisch reluctantly states that "fish stories" and stories of the merits of the Rundle-Spence products do not necessarily come in the same category; however, he does admit that he is "some fisherman" and that he looks forward to many pleasant days at the lakes of northern Minnesota during the month of June, as the most successful exponent of the piscatorial art established by Isaac Walton.

"RADIATION" FOR APRIL.

The April number of "Radiation," the monthly magazine published by the United States Radiator Corporation, of Detroit, Mich., has been issued, and it is brimful of matter of vital interest to heating contractors. Among the more notable articles are: "An Interesting Heating Installation in San Francisco," "Taking Care of Tools," "Making Houses Warm," "Sales Methods" and "Scientific Management as Applied to the Heating Industry."

WILL REPRESENT PEERLESS SELLING COMPANY IN THE EAST.

J. H. Harper, of St. Louis, has been selected as manager of the sales division of Peerless Selling Company, of Evansville, Indiana, for the state of New York. Mr. Harper was formerly general agent at St. Louis for the Kansas City, Missouri & Orient R. R. and is a man of

J. H. Harper.

sterling and forceful character, who comes to the Peerless Selling Co. through that concern's appreciation of the fact that the plumbing business of New York state is a valuable outlet for their line of manufactured products. At this time Mr. Harper's permanent headquarters in the East have not been decided upon.

INTERESTING TESTS RECENTLY MADE.

The "Never-Split" Seat Company, of Evansville, Indiana, recently issued a circular containing a laboratory

Cover Design of Never-Split Seat Co. Circular.

test of a defective closet seat. The test was made by Iron City Testing Laboratory, at Pittsburgh, Pa. The illustration shows the cover of the circular issued by the "Never-Split" Seat Co., and the following is the report of the test made by the Iron City Testing Laboratory:

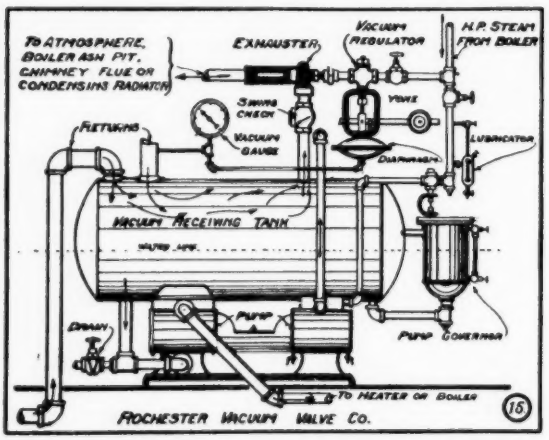
"Each bacteriological analysis was made on one square centimeter scrapings from the seat. Nos. one and three were taken in the front of the seat, and Nos. four, five and six were taken in the back of the seat.

"Number of tests and number of bacteria per square centimeter as follows:

"No. 1	3,000
No. 3	9,000
No. 4	21,000
No. 5	32,000
No. 6	44,000"

ROCHESTER VACUUM VALVES.

The Rochester Vacuum Valve Co., of Rochester, N. Y., manufacturers of vacuum heating specialties, are calling to the attention of the heating trades the fact that they guarantee all Rochester vacuum valves and other devices which they manufacture and sell. Rochester vacuum valves are miniature steam traps and connected to the return ends of radiators and coils from which they drain air and water. The illustration in this column shows the Rochester steam jet air exhauster and vacuum regulator properly applied to the return tank of a heating system. Old systems can be easily equipped with these devices, and with the Rochester vacuum valves placed on the returns of all coils and radiators, a first-class return

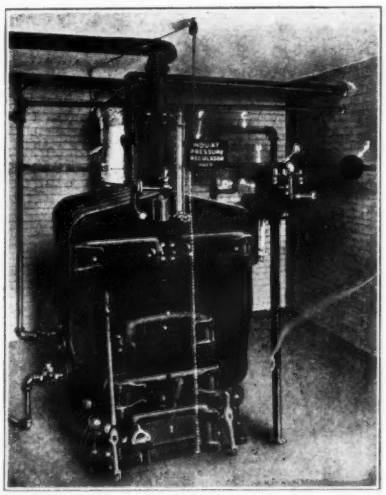


The Rochester Steam Jet Air Exhauster and Vacuum Regulator at Work.

line vacuum system is obtained at minimum cost. The return tank receives the water and air from the heating system, all returns being brought in above the water line in tank. The pump is the ordinary boiler feeder type and delivers the return water to the boiler or heater. The exhauster discharges the air from the return tank and entire heating system, and also creates a moderate vacuum on same. The vacuum regulator controls the steam exhauster, while the pump is controlled by a float or other suitable governor. The manufacturers state that this is simply an up-to-date application of the old Williams system, and that there is no royalty to be paid as the patents expired in 1899. This is the regular return line vacuum system using improved automatic devices. Architects and the trade can secure full descriptive circulars upon request to the above address.

THE MOUAT-SQUIRES COMPANY REPORT BUSINESS EXPANSION.

With the issuing of a new catalogue, the Mouat-Squires Co., of Cleveland, O., report that they are marketing a new pressure gauge, illustrated herewith, which is connected with the water line of the boiler. This gauge is not affected by high or low water or the variations of an unsteady water line, but shows the pressure accurately in ounces of water elevation from a small

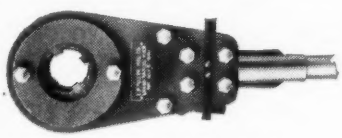


The Mouat-Squires Co's. New Pressure Gauge on the Job.

receptacle connected into the steam space of the boiler. It is claimed that this is a great improvement, inasmuch as the new gauge being above the water line, no water can be forced out of the boiler through it, and it indicates the pressure much more accurately. The Mouat-Squires Co. also report that their business during the past season has been very successful and that they anticipate greater increased demand for their products with the issuance of this new catalogue. In this catalogue are illustrated and described all of the products of that concern.

FULLER'S RATCHET DIE STOCK.

The American Equipment Co., of Grand Rapids, Mich., is promoting the sale of Fuller's Ratchet Die Stock, which is illustrated herewith. This die stock is so constructed making it possible to work in corners, trenches,



Fuller's Ratchet Die Stock.

under cars, steam fitting and all kinds of close-in work which plumbers, gas fitters and steam fitters have to contend with. The features of the Fuller ratchet die stock are said to be simplicity, durability, strength and weight.

Architect Louis R. Benz has just opened an office at 121½ West Hill Avenue, Valdosta, Ga., and he would like to receive catalogs of plumbing and heating goods.

THE METAL MARKET

A REACTION IN COPPER.

Further advances in the prices of copper raised the quotation to 16 cents delivered in the Connecticut Valley. This price was only held momentarily, for on the day following, the London market dropped sharply.

While there is no doubt the consumption is large both at home and abroad, any rapid upbidding of prices would be frowned on and probably result in a lessened demand. The exports during April have been small, and the full returns for the month of March showed that the exports amounted to about 27,000 tons. With the advance in copper, sheets are now higher, being held at 21 to 21½ cent base.

PIG TIN.

Prices are steady at around 43 cents for tin in 5 ton lots. Consumers have been well supplied, the Minnehaha bringing in 1,100 tons, while the Minnewaska will bring 1,500 tons. Consumption is large, and this demand from the mills is likely to continue for at least two months.

OLD IRON.

With the steel mills running at the increased production the demand for scrap has decidedly improved, and prices have advanced moderately. Quotations are as follows:

No. 1 yard wrought, long	$12.00 to 12.50
No. 1 yard wrought, short	11.50 to 12.00
Machinery cast, broken up	11.50 to 12.00
No. 1 railroad wrought	12.00 to 13.00
Heavy melting steel scrap	11.75 to 12.25
Stove plate	8.75 to 9.00

ADVANCE IN MARKETS AND PIG IRON.

The increase in the production of pig iron during March was startling to the trade, being the largest of any month in the history of the iron industry save March, 1910, and in that month stocks were being accumulated in all the important iron-making centers. Now the furnaces are drawing on their reserve stocks and foundries also have little or no material on hand. Business is much more active, quotations having advanced and prices of pig iron being fully 25c a ton higher all around. An increase in the demand for steel-making iron also made itself felt and the business outlook shows a decided improvement. The southern furnace interests have been the most active sellers and have pushed the price up to $10.50 Birmingham for Southern Foundry No. 2. In the north southern iron has risen from 25 to 50c per ton.

Pat and Mike were obliged to halt their heavily loaded cart to make way for a funeral. Gazing at the procession, Pat suddenly remarked:

"Mike, I wish I knew where I was going to die. I'd give a thousand dollars to know the place where I'm going to die."

"Well, Pat, what good would it do if you knew?"

"Lots," said Pat; "shure I'd niver go near that place."
—National Monthly.

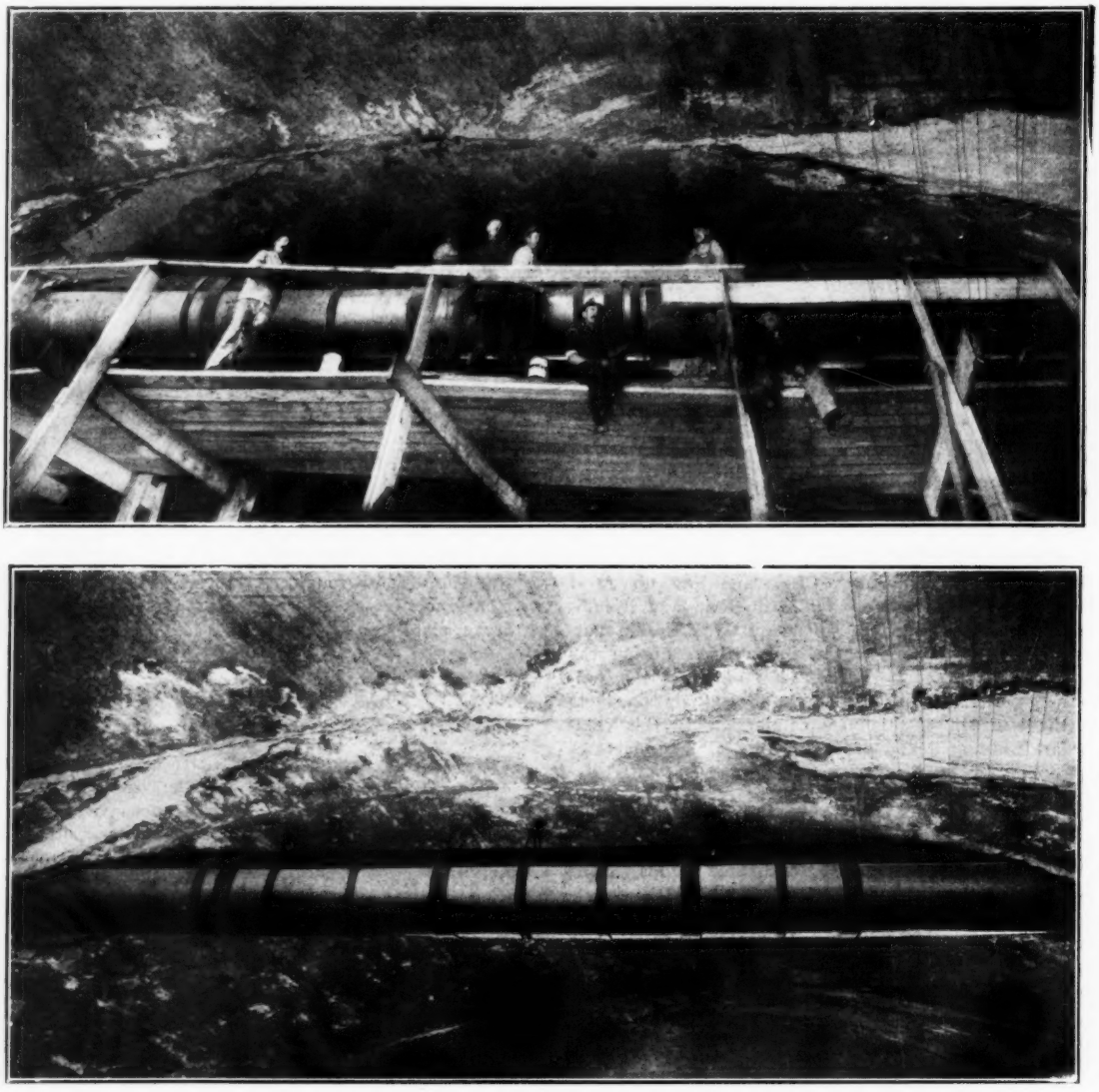
A UNIQUE METHOD OF REPAIRING A LEAKY WROUGHT-IRON SEWER PIPE.

By Frederick Latourrette, Engineer of Construction, Street and Water Department, Jersey City, N. J.

Many times what seems to be a difficult problem to the engineer can be solved in a surprisingly simple manner, as the following case will illustrate. Our problem was the repair under difficult conditions of a 36-in. riveted pipe, of 3/8-in. wrought-iron, which had been in service for 35 years, to carry sewage under the floor of a bridge. Originally the pipe had been under the plank floor of a truss highway bridge, and had become deeply pitted by street droppings from overhead. Some time ago the bridge was replaced by a reinforced-concrete arch of 60-ft. span, into which a part of the pipe was built, the rest being exposed for a distance of about 50 ft. near the soffit of the arch. As a result of the pitting on the outside and the scour within, the pipe recently began to leak badly, and some means of repairing it cheaply and quickly became imperative.

The sewer above this point is on a considerable grade, so that the pipe often runs full and occasionally under some pressure. The pitting extended around the entire circumference, and leaks developed along the whole length of the bottom and for about one-third the distance up the sides. As the pipe was suspended over a street, and the sewage could not be diverted to another pipe, the situation called for prompt attention.

Plans and specifications were arranged for making repairs by leaving the old pipe in place and building another of 4 ins. larger diameter around it, filling the 2-in. space between with Portland cement grout. This method would have necessitated cutting away the arch ring around the pipe, inserting the covering pipe in semi-cylindrical sections, and replacing the arch ring with new concrete when the new pipe was in place. Only one bid was received for undertaking the work under this plan, and that bid (about $3,600) was out of all proportion to the necessary cost of



Repairing a 36 Inch Riveted Wrought-Iron Sewer Pipe Through the Soffit of a Concrete Arch.

the repairs, and was, moreover, a larger sum than the city had appropriated for the work. The case was further complicated by a city ordinance which forbids contracts in excess of $500 without requisite advertising; and advertising again would take time.

It was then that we hit upon the idea of using a patented iron cement known as "Smooth-On" iron cement, which is made by the Smooth-On Mfg. Co., of Jersey City. This Cement had been previously used in some minor cases with complete success. The chief problem now was that this cement would not hold unless applied to a perfectly dry surface. Some way had to be devised for stopping the innumerable leaks.

This was accomplished by first removing all loose rust and scale. The leaks were then stopped by inserting dry wooden plugs, carefully whittled to fit the pits, some of which were nearly as large as the palm of the hand. With the patient application of many plugs and a liberal use of red lead and shellac most of the leaks were overcome. One particularly bad place was fixed by covering it with a piece of burlap which had been previously prepared with coatings of shellac and red lead. This was smoothed over the leaky area and held until the lead had set. All leaks were finally closed and a dry surface obtained. The entire surface of the pipe was then painted with a solution of "Smooth-On" cement No. 2, applied with a heavy paint brush. When this coat was dry a heavier covering of the same material was troweled on.

The concrete arch was cut away from the lower half of the pipe, so as to allow the semi-cylindrical plates which were used to cover the lower half of the pipe to enter 12 ins. into the soffit. These plates were 3/16-in. thick and about 10 ft. long, curved to a radius about 1 in. greater than the greatest outside radius of the pipe. The joints between the plates were made by butting the ends together and covering them with a 3/16 × 8-in. iron band which passed entirely around the pipe. Between the joints were two 3/16 × 4-in. bands which also bound the semi-cylindrical outside shell to the old pipe. The inner surfaces of the bands were carefully coated with soft cement before the bands were put in place.

The space between the shell and the pipe was then poured full of a mixture composed as follows:

Smooth-On concrete iron cement No. 7..1 part by volume
Sharp sand .....1 part by volume
Dykerhoff Portland cement .....1 part by volume

This space varied from 7/16-in. over the outside plates of the pipe to 7/8-in. over the inside plates. The top of the pipe was then plastered over with a coating of the same mixture applied with a trowel. When completed the pipe was as good as new at a cost of about $1,000. All work was done by city employes, and no single contract for material amounted to over $500. The accompanying illustrations show the work in progress and the completed job.

Easily Told.

"How do you know that your daughter's music is improving?"

"The neighbors are getting more friendly."—Houston Post.

Up to Date.

"They're very up to date."

"That so?"

"Yes. Her daughter is to be married soon, and she has sent out invitations that read this way: "Mr. and Mrs. Henry Wattersby Brown request your presence at the first wedding of their daughter Jane."—Detroit Free Press.

GIVE THE BOY A CHANCE!

By Harry Gale Nye.

Not long ago, a plumber friend of mine confided in me that his boy was causing him considerable worry. There did not seem to be anything for the boy to do in the town where my friend lived, and when a boy has nothing to do his idle hands are sure to find some mischief. My friend is a sedate business man. He does his part in the community where he lives, never avoids paying his taxes and has a heart in him as big as a load of hay.

There is no reason on earth that I could think of why a boy of his should not turn out to be the same sort of a man as his father is. But the boy is not turning out that way, and there must be a reason.

There are many boys in this land today, who, like the plumber's, lack the promise of becoming intelligent, honest citizens. They gad the streets, smoke cigarettes, do not mind their mothers, quarrel with their fathers, run away, come home again, are simple and foolish when it comes to girls and sometimes even vicious. What is the matter with the boy?

In this connection I want to say that sometime ago, in a little village not far from Chicago, I heard Senator William Mason talk of the opening of a new auditorium for the village. The Senator, after complimenting the builders upon the beautiful audience room, thrown open to the public, said: "This auditorium has benefited every property-holder in the town. It is a place where you can get together; and in your getting together I want you not to forget the boys.

"Have you ever noticed on the streets at night in front of the theatre or in front of some church where an entertainment is going on the boys are always hanging around and would be glad to be on the inside if they could get there?

"And about the time they have congregated, along comes a policeman or somebody in charge and drives them away. Did you ever think how many times boys are driven away during their impressionistic days?

"Why are the policemen and the people who have the power continually chasing boys somewhere? The very reason that boys are hanging around shows that there should be something for them to do, some place to go more wholesome than the pool room.

"Of course the street is not the place for the boy, but as soon as the street becomes more interesting to him than the home, the boy will go down town; he will hang out on the street corners.

"Too many people make the mistake of having rooms in the house where a boy cannot go. They object to his playing in the parlor and at night he is tucked in a little cubby hole called the 'Boy's room' that has in it no books and few comforts."

If a father can be a companion to a boy it is good for the boy, but better for the father. It will keep him young—and that is the most desirable thing in this old world. Take an interest in your boy's affairs; take an interest in your boy's games; take an interest in your boy's work. Try to make him love the things you would have him love. Make him like and seek the company you would have him keep. Don't make an old man of him at eighteen, but make a young man of yourself at forty. If you can do this, your boy will not be giving you the trouble that the plumber's boy is giving him at the present time.

News of the Plumbing and Heating Contractors

Reports of the Week from Many Different Cities Show Both Business and Personal Activity in the Trade

NEWS FROM NEW ENGLAND.

Massachusetts.

Worcester.—The Worcester Master Plumbers' Association has elected officers as follows: President, William H. Holmes; vice-president, Daniel F. Loan; secretary, V. J. O'Donnell; treasurer, O. S. Kendall.

New Bedford.—Contracts for heating, ventilating and plumbing the new Katherine street schoolhouse have been awarded by the city property committee. John Perra, who offered to do the heating and ventilating for $12,766, secured that contract and Jeremiah Colohan secured the plumbing and vacuum cleaner contract for $7,050. The other bidders were as follows: Heating and ventilating: Wood, Brightman & Co., $16,442; James N. Conway $12,997; Charles H. Sanborn, Boston, $13,515; Isaac Coffin Co., Boston, $14,966; W. W. Campbell & Son, Boston, $13,998. Plumbing and vacuum cleaner: Wood, Brightman & Co., $8,498; Sherman & McQuillan, $9,619; Crawford L. Dunham, $8,395.42; George J. Allen, $6,565.84. Flavien Hamel, $7,983.

Waltham.—Although the highest bidders, Taylor & Percival have been awarded the contract for replacing the plumbing in the residence of Mr. Mansfield, Superintendent of Cemeteries.

Salem.—The town of Peabody has appropriated $15,000 for the purpose of installing a new heating and ventilating system in the Carter school.

Somerville.—Bids have been received for plumbing, heating and ventilating a new school house that is to be erected by the city. The contracts have not been awarded but have been taken under advisement. The bidders and their figures follow: Plumbing: Armstrong Bros., $3,867; William J. Ahearn, $4,132; C. W. Cahalan, $3,843; E. O. Hunt, $4,464; Higgins Co., $3,883; Leavis & Doherty, $3,288, J. F. Morgan, $4,697, Patrick Mooney, $3,588; John Manning, $4,292; P. H. McCormack, $5,384; Pierce & Cox, $3,988; P. J. Sullivan, $5,399; Thompson & Spear, $4,160; D. A. Carr, $3,719; John O'Connell, $4,198. Heating and Ventilating: Braman Dow & Co., $12,155; W. W. Campbell & Son, $11,908; Hern-Furlong Co., $11,370; J. F. Foster, $10,586; Huey Bros., $10,277; J. J. Hurley, $10,465; Lynch & Woodward, $12,144; McLean & Cousens, $11,241; J. F. Morgan & Son, $12,296, Pierce & Cox, $10,886; W. B. Ross, $12,145; Charles H. Sanborn, $10,300; P. J. Sullivan, $10,200; Arthur J. Sanford, $11,900; Whitten & Jackson, $12,177; Frank E. Woodward & Co., $12,610; F. W. Zemier & Co., $11,076; Commonwealth Heating Co., $10,234.

Marblehead.—Herman F. Snow has purchased a new building at 160 Washington street to be used as an office for his plumbing, heating and other business.

Lowell.—The H. R. Barker Mfg. Co., of this city, is doing a large amount of plumbing work in Boston and elsewhere. Among the big contracts in hand at the present time are: plumbing and heating a 26 apartment block on Beacon street, Boston; plumbing and heating one 46 and another 51 apartment block on Hemenway street, Boston; plumbing and heating a Jewish synagogue in Dorchester; and plumbing a Chinese restaurant in Lynn.

Great Barrington.—Hammer Bros., of this town, have had the distinction of being selected to furnish plumbing fixtures for a residence to be erected for T. C. Luling in Wimbledon, England. The order is to duplicate the fixtures which this firm installed in Mr. Luling's summer residence at Stockbridge, Mass.

Fall River.—William Kennedy has been awarded a contract for installing shower baths and doing other plumbing work at the patrol building of the police department. John C. Greene has a contract for doing similar work at the Northern police station.

Connecticut.

Waterbury.—John M. Gill has been awarded the contract for the plumbing and heating in a residence to be erected for Frederick J. Dixon on Melbourne-Terrace.

New Canaan.—The Henry Plumbing Co. has just been organized and incorporated. W. J. Henry is president, Harold Mead, vice president, Benjamin H. Mead, secretary-treasurer and Floyd Bartram, secretary.

New Haven.—Work is soon to be started on two brick tenement houses on Scranton street for Max Rosoff. One will be arranged for 12 families and the other for one store and six families. S. Lyman & Co. has the contract for plumbing and metal work for both houses.

Maine.

Bangor.—Wiley & Calhoun, of Portland, are to be awarded the contract for heating and ventilating the new high school building and C. H. Babb & Co., of Bangor, the contract for the plumbing.

NEWS FROM THE PACIFIC COAST.

San Francisco.

By an overwhelming majority the citizens of San Francisco approved of the $8,800,000 bond issue at the special election held here on March 28. This money is for building the new city hall, other construction work in connection with the civic center, and the acquiring of additional land adjoining the site of the old city hall. Already condemnation proceedings have been commenced and it is expected that the new sites will be in the possession of the city within a few months. The bonds are now being printed and will be offered for sale as soon as possible after the regulation advertising required by law. The new city hall is to cost about $4,500,000 and already thirty-five leading architects have filed their credentials with the architectural commission and expressed their desire to enter the contest to design the building. Thus the prospect for much new municipal construction work is very close at hand.

In Oakland $2,493,000 has been voted in bonds for a great systems of schools to be erected as fast as practicable under the direction of J. J. Donovan, supervising architect. The work of designing the plans for these school houses, which will cost various sums from $8,000 to $160,000, has already been assigned to prominent architects of Oakland and San Francisco.

The building record for the largest Coast cities for March shows a satisfactory increase, in most cases, over the February record. The spring building season, however, drags somewhat. For the month the best record goes to San Francisco, where the increase amounts to almost a million dollars. The building permit valuations are as follows: San Francisco, $2,593,780, as against $1,764,252 in February. This March is also over half a million ahead of March, 1911. Los Angeles, $1,687,780 for March as against $2,152,963 for February, 1912, and $2,122,886 for March, 1911. Seattle building conditions seem to be steadily improving. Her permits for March amounted to $848,985, almost double the February amount and over $100,000 above the amount for March, 1911. Portland shows a half-million dollar increase over February, the March permits aggregating $1,750,414. This is not quite equal to the amount for the same month a year ago. Oakland for March, $759,858, as against $515,593 for February; Sacramento, $210,834, over double her February record, and San Diego, $537,960, as against $434,688 for February. San Diego's record for the past month is not quite equal to her record for the same month a year ago.

The P. F. Howard Co., wholesale plumbing supply dealers at Second and Howard streets, San Francisco, and Oakland, report business picking up gradually.

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United States Boilers and Radiators heat every nook and cranny of the home to a mild, even temperature of 70 degrees. They heat the home economically, because they are designed with this end in view.

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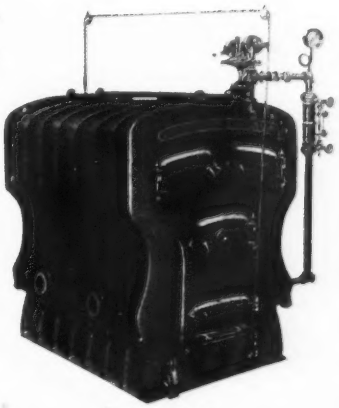
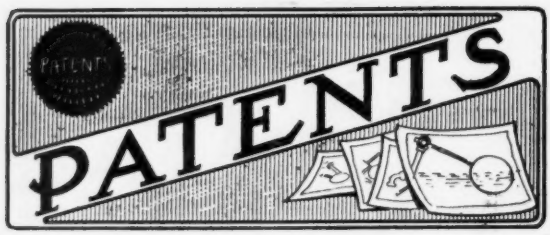
DETROIT	139 Jefferson Avenue
CHICAGO	184 North Dearborn Street
MINNEAPOLIS	901 Washington Ave., South
ST. LOUIS	14th and Pine Streets
KANSAS CITY	220 East 10th Street
OMAHA	916 Farnam Street



Furman Boiler



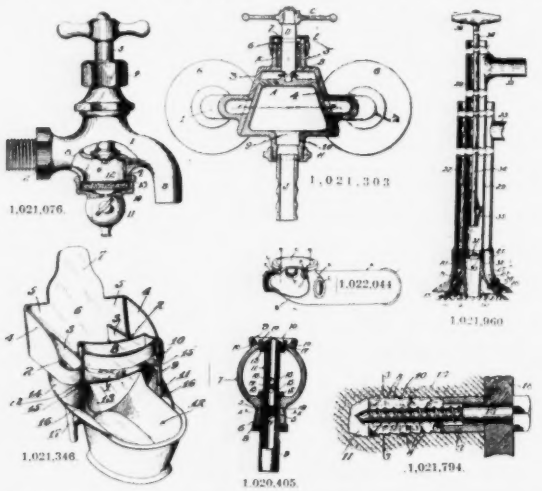
Plumbing Department.

1,021,076. Filter. John Nelson Sisley, Connellsville, Pa. In a filter, a faucet having a depending nipple below the valve plug thereof and in permanent communication with the inlet of the faucet and closed to the outlet by the valve of the latter, a pet cock having an annular head secured to said nipple, and a disk of filtering material seated in the head and abutting against the lower edge of the nipple.

1,021,303. Valve for Water Distribution. Thomas Grant Cooke, Chicago, Ill. In a combination bib or faucet, a conical valve chamber with sides sloping upward having an open bottom and closed top, pipes leading from opposite sides of the chamber to the mains, a hollow rotatable valve comprising correspondingly shaped walls, a closed top, a closed bottom provided with a small central discharge orifice, and a plurality of ports of varying sizes provided in the valve walls adapted to register with the pipes, a valve stem secured to the top of the valve passing through an orifice in the top of the chamber, an integral sleeve upon the top of the chamber surrounding the valve stem orifice, a spring surrounding the valve stem within the sleeve and secured to the valve stem to exert an upward pressure thereon, a cap surrounding the valve stem and forming a closure for the sleeve, the discharge orifice of the valve provided with a depending flange forming a securing means for a discharge nipple.

1,021,960. Cistern or Catch-Basin Cleaner. Jonas H. Wiest, Indianapolis, Ind. A cistern cleaner including an annular flaring base having notches in the edge of the larger end thereof, the smaller end being adapted to have a pump-barrel connected thereto, and a pipe having a flaring pipe-end on one end thereof that extends about the flaring base at a distance therefrom, to form passages through and also around the base to the pipe, the opposite end portion of the pipe having a lateral branch-pipe thereon.

1,021,346. Bath Device. Mabel A. Wilson, St. Louis, Mo. A bath tub comprising an integral structure arranged as a chair having basins on opposite sides of and above the seat,



the outer and rear walls of said basins extending above the inner walls and merging with a wall constituting the back of the chair, and a foot tub whose inner wall underlies the seat.

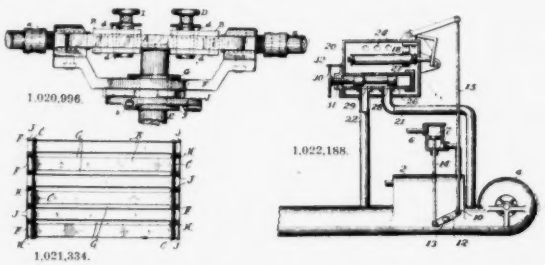
1,022,044. Water-Closet Bend. Ben Oakes, Detroit, Mich. A water closet bend comprising a horizontal soil pipe portion with an outlet opening, and an upturned portion with a main inlet opening, openings for the connecting of waste pipes entering the heel and sides of said elbow portion, said bend having an expanded portion extending around the upturned elbow from the said openings for waste pipes to and terminating in the top portion of the bore of the horizontal portion between the junction of the horizontal portion and the up-turned elbow, and the outlet end, said expanded portion forming a by-passage for air to circulate around the main vertical flow to the openings for waste pipes from the top portion of the bore of the horizontal portion, said by-pass running horizontally around the upturned portion between the plane of the axis of the bore of the horizontal portion and the plane of the top of the bore of the horizontal portion; means for receiving a main inlet pipe, as and for the purpose described.

1,020,405. Bubble-Cup Nozzle. August Engel, Milwaukee, Wis., assignor to Milwaukee Brass Manufacturing Co., Milwaukee, Wis. In a bubble-cup nozzle, a shell attachable at its lower end to a water-supply pipe and having an apertured rim beyond a contracted mouth thereof, together with a central hollow horizontally partitioned stem having ports on opposite sides of its partition, the upper outlet end of the stem being extended through the mouth of the shell clear of the same but terminating within the confines of said rim.

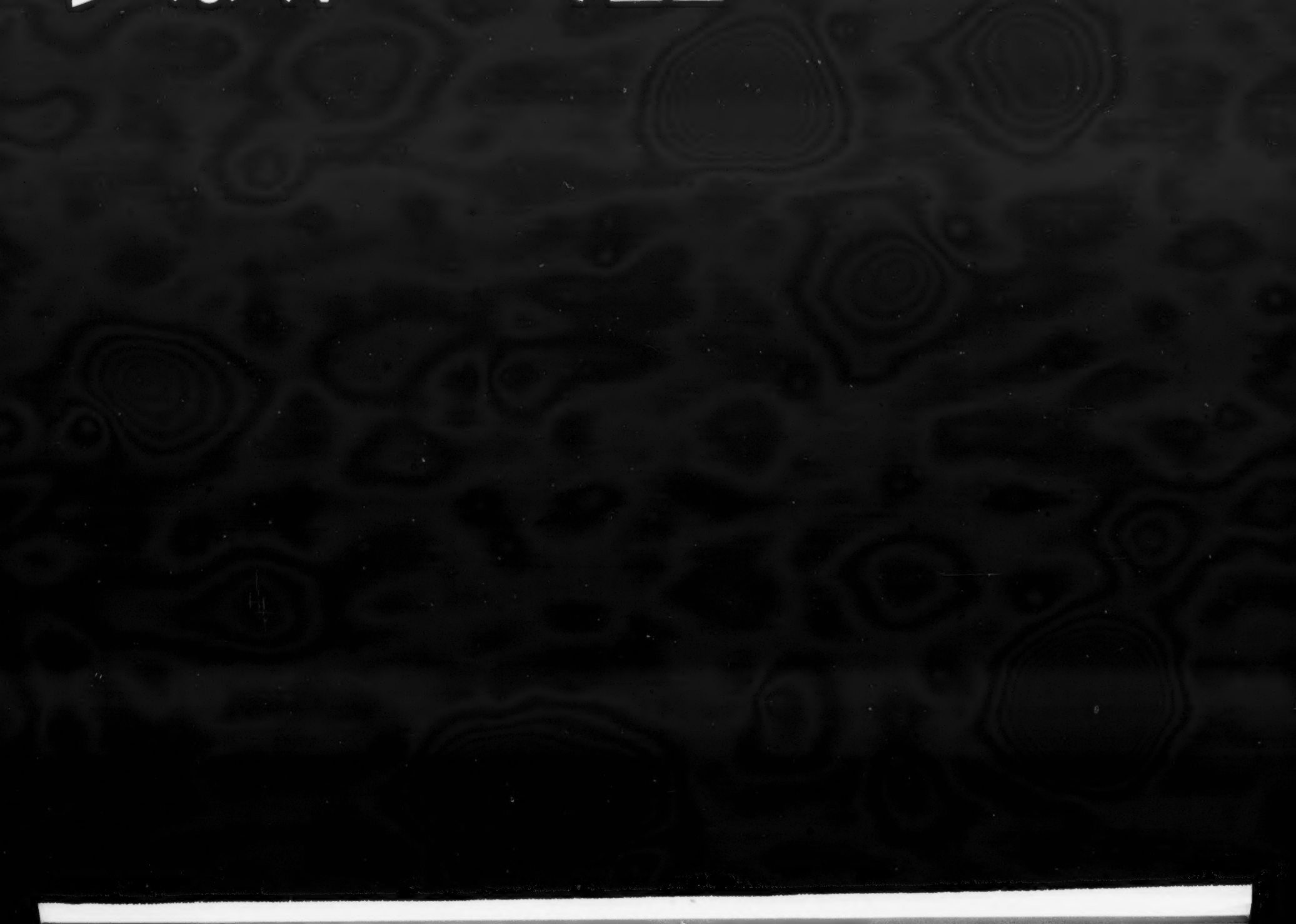
1,021,794. Expansion-Bolt Anchor. Henry W. Pleister, Westfield, N. J., assignor to Henry B. Newhall, Plainfield, N. J. In combination in an expansion bolt anchor, a substantially non-expansible body portion provided with one or more slots and free arms, one or more expanders mounted in the slots, an open recess in one end of each expander, and means carried by the non-expansible body portion to cooperate with the open recess in each expander.

Heating Department.

1,020,996. Dies for Cutting Threads. Milton H. Lukens, Marblehead, Mass. The combination of two rotatable thread cutting dies centrally pivoted to sliding blocks place opposite each other, said dies adapted to cut two or more threads of different pitches, and having two or more keyways cut around



their central holes, pivot pins for pivoting said dies and having tapering keys fixed thereto and adapted to enter said keyways, with sliding blocks one portion of which is above and one portion below said dies, and having two or more keyways cut around the central hole and adapted to receive said pivot pins and their taper keys, and a frame adapted to receive and support said sliding blocks and to adjust them to and from each other by threaded handles forming a part thereof, substantially as described and for the purposes set forth.

1,021,334. Radiator. Theodore D. Robinson, Lockport, N. Y. A radiator comprising a casing and a plurality of assembled tubes set into said casing, each tube having a bead near one end formed by expanding the metal outward and a retainer flange spaced from said bead, said tubes having the heads of adjoining tubes and the edges of the retainer flanges of adjoining tubes lying in contact to provide solder-receiving grooves between the heads and flanges, and solder in said grooves uniting said tubes.

1,022,188. Compensating System of Temperature Control. Harry G. Geissinger, New York, N. Y., assignor to Geissinger Regulator Co., New York, N. Y., a corporation of New York. A temperature regulating system comprising means for regulating the temperature of air supplied to an air-duct leading to a compartment to be maintained at a certain temperature, a heat-insulating casing or chamber isolated from the influence of the temperature in the compartment to be regulated and located at a distance from said air-duct, a thermostat controlling said regulating means and located within said chamber, means for supplying said chamber with currents of warm and cold air respectively.